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# A SYSTEMATIC STUDY OF TRYPETIDAE IN THE JAPANESE EMPIRE

(14 plates and 92 textfigures)

Tokuichi SHIRAKI

(Accepted for publication, June 20th, 1932)

COQUILLETT (1898), ENDERLEIN (1911), MATSUMURA (1916), MIYAKE (1919) and HENDEL (1912, 1915, 1927), in their classical papers on the Japanese and Formosan fruit-flies, have enumerated 80 species, most of which were described as the new species.

It was thus with the greatest pleasure that I was enabled to examine, through the courtesy of Dr. W. HORN, Prof. Dr. Z. SZILÁDY, Prof. Dr. F. HENDEL, Prof. Dr. G. ENDERLEIN, Prof. Dr. H. WACHS, Dr. F. W. EDWARDS, Dr. J. M. ALDRICH and Prof. E. SÉGUY, the materials of the Deutsches Entomologisches Museum, the Musei Nationalis Hungarici, the Natural History Museum of Wien, the Zoologisches Museum in Berlin, the Stettiner Museum, the British Museum, the U. S. National Museum and the Muséum National d'Histoire Naturelle (Paris) respectively. At the same time I had an opportunity to study the very important collections of BEZZI and BECKER.

In the recent time I have been in the position to study the extensive collections made in Formosa and Japan, as well as in Corea and Saghalien, by many of our own entomologists.

All these studies are incorporated in the present work, which gives a good idea of the Trypetid-fauna of our countries, and includes descrip-

tions of about 165 species of fruit-flies. The types or paratypes of almost all the new species here described are deposited in the Entomological Museum of the Government Research Institute of Formosa, Taihoku, Japan.

My best thanks are due to Professor Dr. S. MATSUMURA of the Hokkaido Imperial University for the loan of his type specimens. Professor Dr. K. OSHIMA, Dean of our Faculty of Science and Agriculture, has assisted me in many ways and his help is most gratefully acknowledged. Finally I should like to record my indebtedness to Mr. B. SAKUMA whose beautiful and accurate drawings reveal many details which are difficult to express in words.

### General Characters of the Family

The so-called fruit-flies belong to a rather outstanding division of the Acalyptrate Muscids and are not difficult to recognise among the latter. In the Oriental fauna there are, however, many related forms which may easily be confounded with them because of a very similar wing-pattern as well as their closely allied chaetotaxy. Trypetids may be distinguished from the nearest families by the following essential characters :

1. The head bears the inferior fronto-orbital bristles and the parallel or divergent postvertical bristles, the latter never being crossed.
2. The thorax bears the prominent bristles mostly as follows :  
Two pairs of scapular, a pair of dorsocentral, a pair of praescutellar, one humeral, two notopleural, one praesutural, three supra-alar, one mesopleural, one pteropleural and one sternopleural. Thus, as to their number, they are variable to some extent, but the four scapular bristles are almost in all cases.
3. The abdomen consists of four tergites in the male and of five in the female, the first one being long and composed of two segments soldered together. In the female it terminates in a

corneous, three-jointed and pointed ovipositor, often very long and usually flattened.

4. The legs are furnished with no praeapical bristles on the tibiae and with distinct spurs only at the end of intermediate tibiae.
5. The wings have a characteristic venation and are usually marked with a distinct pattern, consisting chiefly of bands or reticulate patterns. The subcostal vein becomes indistinct towards the tip, where it is merged in the stigmal callosity; radius, ending at the middle of the anterior margin of wing and being usually beset with spines; r-m and m-cu are very much nearer to the wing-tip than to the wing-base; the basal cells are of large size; the anal cell very conspicuous, with its inferior apical angle mostly drawn out into a point which in some cases is very long.

## HEAD

(Figures 1—3)

Head broad or narrow, broadened below or not; the proportions

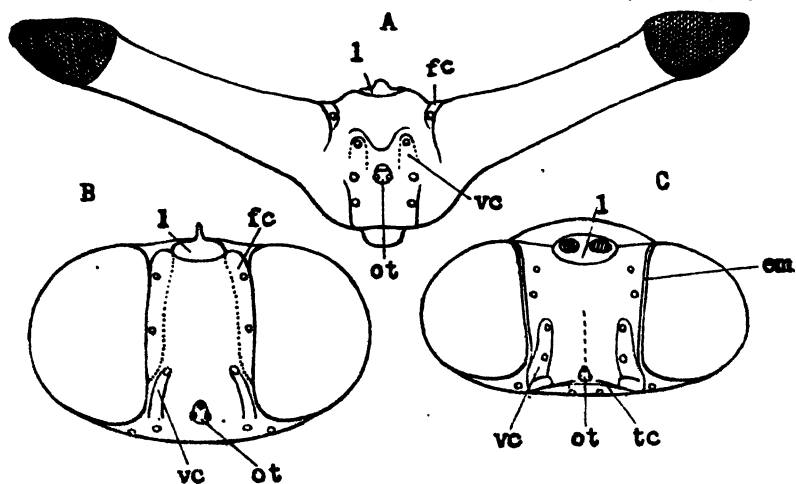


Fig. 1.

Frons—dorsal view.

A. *Pseudopelmatopus nigricostalis* ♂ ×9; B. *Paratridacus yayeyamanus* ♀ ×15; C. *Sophira excellens* ♀ ×15.

l—Lunula; fc—Frontal callus; vc—Vertical callus; tc—Transverse carina; ot—Ocellar triangle.



between the width, length and height are often important in distinguishing the genera.

**Frons** (Fig. 1) flat, convex or concave without any distinct vibrissae but sometimes pubescent or very rarely with one or two pairs of bristles in the middle and usually bearing a row of bristles on its lateral borders, where there are two pairs of long callosities of which the superior pair so-called "*vertical calli*" is almost always well-defined, usually more or less elevated and their form is very often important in distinguishing the species; the inferior pair or "*frontal calli*" is almost always very indistinct. Frons often well-elevated along the extreme eye-margins, in profile usually straight or convex; at the anterior extreme there is a distinct sclerite, so-called "*lunula*," which is always crescent-shaped and is elevated or hollowed.

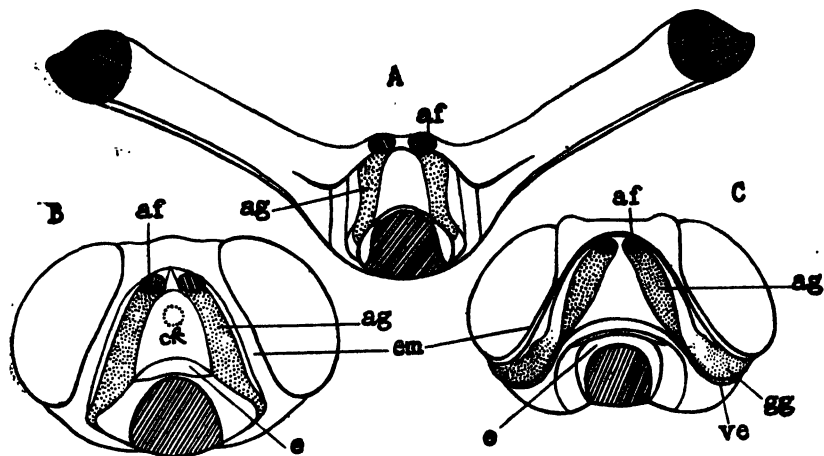


Fig. 2.

Face—anterior view.

A. *Pseudopelmatus nigricostalis* ♂  $\times 9$ ; B. *Paratridacus yayeyamensis* ♀  $\times 15$ ; C. *Sophira excellens* ♀  $\times 15$ .

af—Antennal fovae; ag—Antennal groove; em—Eye-margin of face; gg—Genal groove; e—Epistoma; ck—Central knob; ve—Vibrissal edge.

**Face** (Fig. 2) usually flattened, often concave or somewhat swollen in the middle, usually with the *antennal grooves* which are reaching to the upper mouth-edge or not, and very rarely with an indistinct central knob; the *eye-margins* prominent, narrow or broad, usually broadened

below; the upper mouth-edge usually slightly produced forwards; but often very strongly or, more rarely retreating. *Epistoma* prominent or not. Face in profile straight or concave, rarely convex, the angle between the frons and face being very variable and often being a very important character in determining the genera.

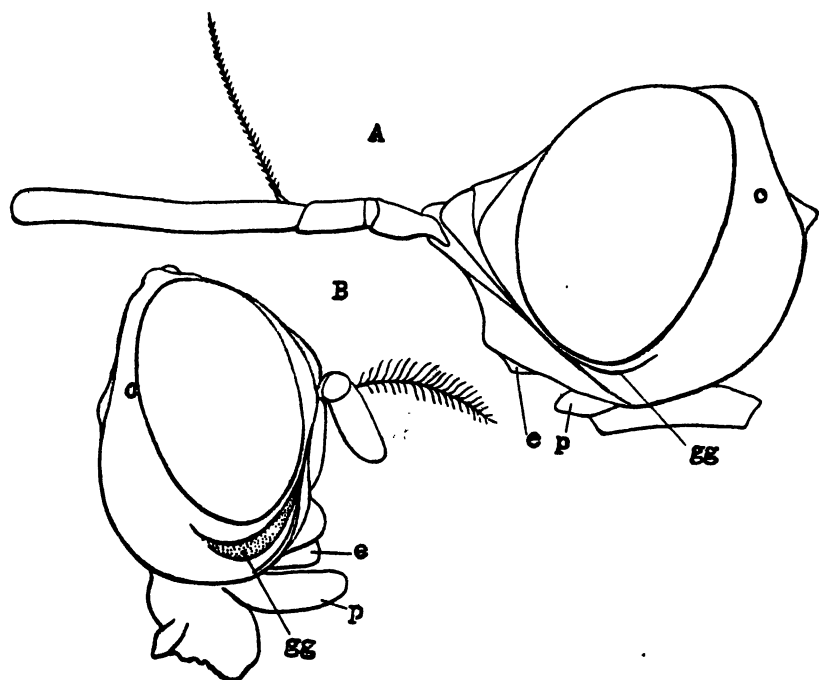


Fig. 3.

Head—lateral view.

A. *Meracanthomyia arisana* ♀ ×23; B. *Sophira excellens* ♀ ×23.

e—Epistoma; gg—Genal groove; p—Palpus; o—Occiput.

**Cheeks** (Fig. 3) broad or narrow, with a transverse sulcus, known as the *genal groove*; below the genal groove there is a row of short bristle-like hairs, which are often very prominent and extend from the face to the occiput, this bristled portion being named as the *vibrissal-edge*. The inferior margin of the cheeks is usually called the lower mouth-edge, which is long or short and straight or convex or concave.

**Occiput** (back of the head) flattened above and swollen below;

almost always with a row of very short bristles, known as the occipital row. The lower swelling portions are sometimes very prominent, if so they are specially called *lateral swellings*.

**Vertex** transversely very narrow, always with a rather prominent *ocellar triangle* and with a *transverse carina* which is sometimes very indistinct.

**Eyes** very far apart from each other in both sexes, nearly always at the same distance; rounded or narrow, oblique or not, very rarely narrowly but slightly produced into the face in the median portion, microscopically pubescent or absolutely bare.

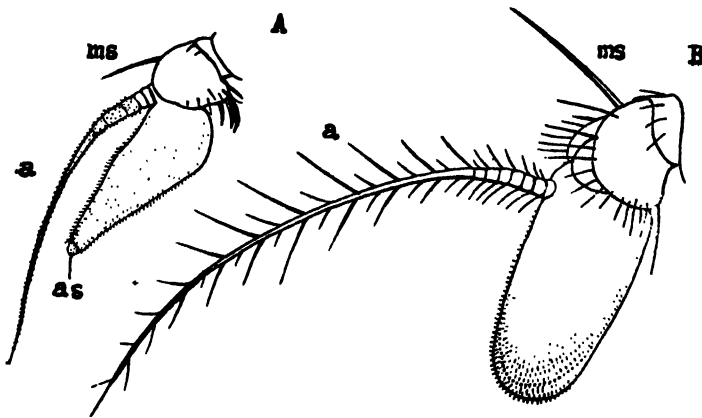


Fig. 4.

Antennae—external side.

A. *Rhabdochaeta asteria* ♀ × 61; B. *Carpophthorella magnifica* ♀ × 61.

ms—Median seta; a—Arista; as—Apical seta.

**Antennae** (Fig. 4) drooping, very important with reference to the direction and length of the second joint, being elongate or not and pored or not; first joint always very short, usually furnished with a few bristles along the supero-apical margin; second joint almost always sparsely covered with many short bristles on the upper and inner surfaces and furnished with a very few and very long bristles along the infero-apical margin, usually in the middle of the upper side there is a distinct long bristles named *median seta*; 3rd joint compressed, broad or elongate, pointed or rounded, rarely reaching the epistoma, very

rarely with a very short *apical seta*; the arista usually placed at the upper base, usually with more than three basal joints and microscopically pubescent, but sometimes entirely bare or distinctly pubescent or pilose on both sides or only on the upper side, or evidently plumose.

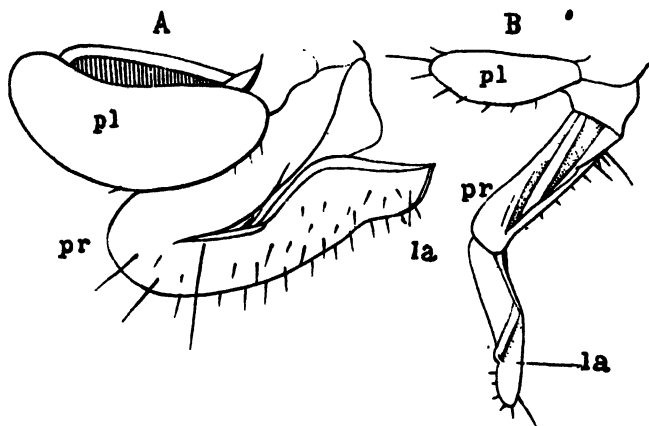


Fig. 5.

Proboscis and palpus—lateral view.

A. *Melleis apicalis* ♀  $\times 35$ ; B. *Ensina lacteipennis* ♂  $\times 35$ .

pl—Apical joint of palpus; pr—Proboscis; la—labella.

**Proboscis** (Fig. 5) broad and short or elongate and geniculate; labellae, or *flaps*, being very short or very much prolonged and directed backwards. **Palpi** (fig. 5) compressed, usually not reaching the upper mouth-edge, or rarely exceeding the latter, two-jointed, as a rule the basal joint being indistinct; the apical joint is usually rounded at the tip, but rarely pointed, the tip being furnished with many bristles, rarely along the under side there are numerous brush-like bristles.

## THORAX

(Fig. 6)

Thorax almost always broader than the head, longer than wide, or very rarely elongate, broadest at the middle or after the middle, rounded above or, rarely, flat. The *notum* or mesonotum may be divided into two portions by the transversal suture which is usually interrupted in the middle or, rarely, indistinctly entire, the anterior portion being

known as the *praesutural disc* and the posterior as the *postsutural*; *humeral*, *notopleural* and *supra-alar* callosities distinct; rarely, especially in the subfamily *Dacinae*, just above the notopleural callus there is a small callosity known as the *praesutural callus* and in the postsutural disc there are also one middle and two lateral elongate callosities, the former being known as the *median postsutural callus*, and the latter, just above the supra-alar calli, known as the *lateral postsutural*. The surface is almost always covered by a dense tomentum or rarely bare from that, and is furnished with numerous short, pointed or sometimes obtuse, pubescence.

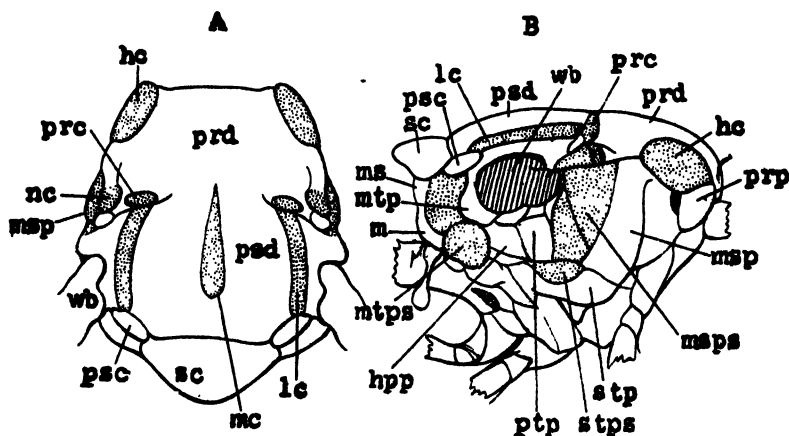


Fig. 6.

Thorax of *Zeugodacus scutellatus* ♂ ×9—A. dorsal view; B. lateral view.

prd—Praesutural disc; ps—Postsutural disc; prp—Propleuron; msp—Mesopleuron; stp—Sternopleuron; ptp—Pteropleuron; mtp—Metapleuron; sc—Scutellum; hpp—Hypopleuron; m—Metanotum; ms—Mesophragma; hc—Humeral callus; nc—Notopleural callus; prc—Praesutural callus; wb—Root of wing; psc—Postalar callus; lc—Lateral postsutural callus; mc—Median postsutural callus; stps—Sternopleural spot; msp—Mesopleural spot; mtps—Metapleural spot.

The **pleura** consists of pro-, meso-, ptero-, meta- and hypopleuron; the *propleuron* placed just in front of the first stigma, very small and rather indistinct; *mesopleuron*, the largest one, very conspicuous, almost subquadrate, with the anterior margin strongly oblique behind and the posterior margin straight and nearly perpendicular; *ptero-pleuron* always distinctly smaller than the preceding one, and almost always longer than

high, usually widened beneath, with the posterior margin straight or concave or rarely convex, on the supero-posterior margin there is a distinct *squamula* which is distinctly divided into two portions (*thoracal* and *alar*) and is sometimes very narrow; *hypopleuron*, the space above the middle and hind coxa, between the pteropleuron and metapleuron, much smaller; *metapleuron* placed just supero-posterior the preceding sclerite, always subtriangular and nearly as large as hypopleuron, sometimes very indistinctly defined from mesophragma. The surface is always less pubescent and tomentose than the notum. In the Dacinae there is a large elevated spot along the entire posterior margin of the mesopleuron, and a subtriangular similar spot on the metapleuron, the former being named the *mesopleural spot* and the latter *metapleural spot*. On the upper border of the *sternopleuron* (a large sclerite just above the middle coxa) there is a small elongated spot in the Dacinae, the spot being called the *sternopleural spot*.

The *sternum* situated between the pleura and coxae, and is easily divided into three sclerites, of which the anterior one, very small and elongate, is *prosternum*, the next or middle very large subquadrate one, *mesosternum* (usually called the sternum), and the posterior very small one, *metasternum*. The surfaces of these sclerites are covered by a tomentum and bear a very little pubescence and are rarely entirely bare from them.

The *scutellum* is almost always subtriangular, with the posterior tip rounded or more or less pointed; dorsum rounded or sometimes flat, tomentose as in the mesonotum, but always conspicuously less pubescent or entirely bare; ventre flat, never pubescent; the margins sometimes carinate. Just below the scutellum there is a small, well defined portion, convex hindwards, which is named by almost all dipterologists the *mesophragma*<sup>(1)</sup>; between the mesophragma, hypopleura and abdomen there is a rather large, always strongly convex, quadrate sclerite, usually called *metanotum*. The metapleura + hypopleura + metanotum sometimes known as the *postscutellum*, especially by HENDEL.

(1) Mesophragma + metanotum or metanotum only known as mesophragma by HENDEL.

and also by BEZZI.--All these sclerites are never pubescent; but usually slightly tomentose.

## ABDOMEN

(Fig. 7)

Narrow and elongate, or short and broad, oval or oblong or sometimes stalked, with 5 visible tergites in the male and 6 in the female, the first two tergites in both sexes usually fused together, never freely appearing, the fused suture being very often entirely obsolete in a large median space; the 5th tergite of male always being the longest and largest; the 6th tergite of female rather small, in the subfamily Dacinae very often invisible, and in the remaining subfamilies always distinct

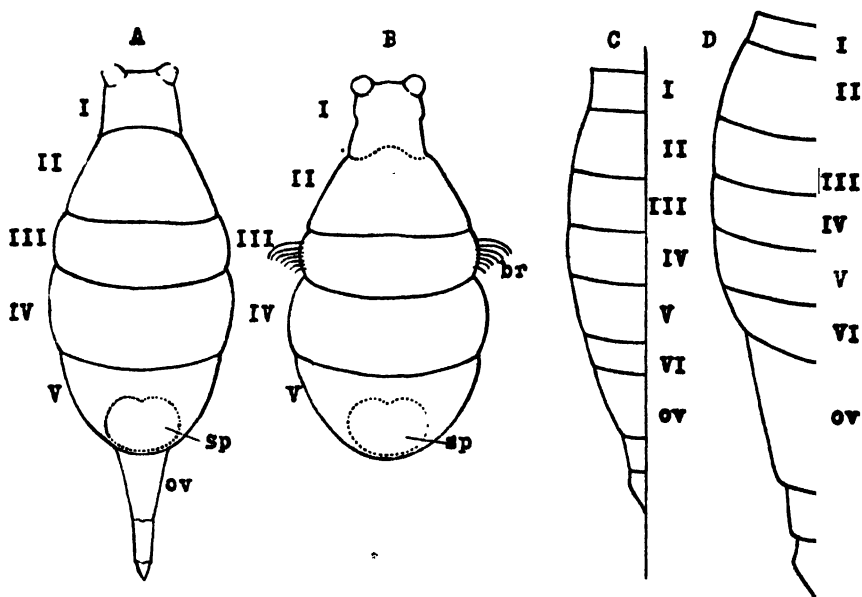


Fig. 7.

Abdomen—dorsal view.

A. *Mellis apicalis* ♀ × 9; B. do ♂ × 9; C. *Proanoplomus japonicus* ♀ × 9; D. *Paratephritis fukuii* ♀ × 23. /

I, II, III, IV, V, VI—Dorsal segments; ov—Basal joint of ovipositor; br—row of bristle-like hairs; sp—Shining spot.

and longer or shorter than the preceding one; the third tergite of male with a row of some bristle-like hairs along the postero-lateral margin in the Dacinae. The dorsum usually convex, tomentose, and pubescent and bristled; the fifth tergite very often with a large shining spot.

The ventre conspicuously narrower than the dorsum gradually broadened hindwards, almost always flat, composed of 7 sternites in the male and 8 in the female, the surface being nearly that of the dorsum; the first two sternites are very small and indistinct; the last sternite in the both sexes never much longer than others.

*Hypopygium* (the segments followed to the large tergite) nearly always small and rather inconspicuous, usually globular almost always slightly asymmetrical; genitalia almost always very small or sometimes nearly indistinct, usually may be seen as two ventral appendages, but often only one pair.

*Ovipositor* corneous, composed of three joints, of which the last two are almost always telescoped into the basal joint, the only sharp-pointed tip being outside; basal joint, usually called "ovipositor", being important in shape and length, it may either be flattened, cylindrical or bottle-shaped and either short, long or very elongated, almost always pubescent or sometimes bristly.

## WINGS

(Fig. 8)

Narrow, broad or very dilated, with a characteristic neuration and usually marked with a distinct pattern; the pattern may be reticulate or may consist chiefly of bands, or bands as well as spots; sometimes the wings are entirely hyaline. The subcostal vein becomes indistinct towards the end where it coalesces and is merged with the stigma, but sometimes is distinct throughout. On the costa, usually touching the inner margin of the stigmal callosity, there is nearly always the *costal bristle* or *costal spine* which may be obsolete, more or less developed or even double, in some species there are many costal bristles. The shape and size of the stigma is important as it may be short, long or very



long; and the presence or absence of the minute and short bristles on the third longitudinal vein is also important in the classification.

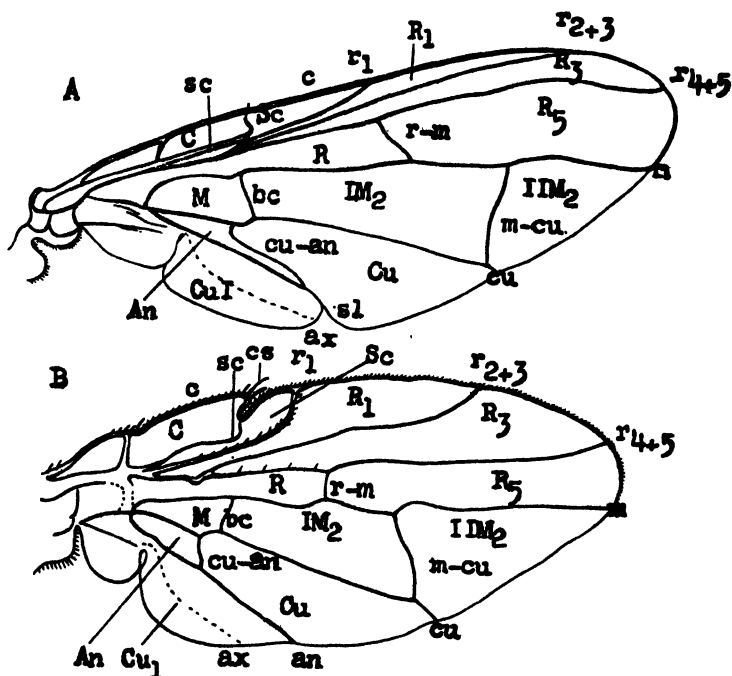


Fig. 8.

Wings - right.

A. *Zeugodacus scutellatus* ♂ × 8; B. *Rhabdochaeta formosana* ♂ × 15.

sl - Supernumerary lobe; cs - Costal spine; bc - Basal cross-vein.

The hind margin in some Dacinae may be distinctly sinuated at the end of the anal vein, if it is so, the hind corner of the second posterior cell may be more or less lobed and known as the "supernumerary lobe".

The length, direction, form and position of the veins and the form and length of the cells supply very important characters and should always be taken into consideration.

The longitudinal veins are distinguished as follows:

**Costa (c)** or *costal vein* ending at  $r_{4+5}$  and being more or less thickened and ciliated over its whole length; sometimes at the inside of the stigma nearly interrupted by a incision.

**Subcosta** (sc), *auxiliary vein* or *mediastinal vein*: thin and often short and indistinct, but it may be quite distinct, usually very near  $r_1$ .

**Radius 1** ( $r_1$ ), *first longitudinal vein* or *subcostal vein*: variable in length and bristly over its whole length; it may not reach the radio-median cross vein or it may reach it or it may pass beyond it.

**Radius 2+3** ( $r_{2+3}$ ), *second longitudinal vein* or *radial vein*: straight, bent in the middle, or wavy; more or less distant from  $r_1$ , very rarely bearing a stump of vein.

**Radius 4+5** ( $r_{4+5}$ ), *third longitudinal vein* or *cubital vein*: straight or bent, parallel or divergent with  $m$ ; but rarely convergent, usually more or less approximate to  $r_{2+3}$ ; bare or bristly either over its whole length, or at the base alone, or as far as the small cross vein.

**Media** ( $m$ ), *fourth longitudinal vein*, *discoidal vein*, *media 1+2*, or *media 1*: straight or curved after the hind cross vein, rarely curved forward at the tip or, very rarely, curved between the small and hind cross veins.

**Cubitus** ( $cu$ ), *fifth longitudinal vein*, *postical vein*, or *media 3+cubitus 1*: more or less diverging from the media, usually bare but very rarely bristly over its whole length.

**Analís** ( $an$ ), *six longitudinal vein*, *anal vein* or *cubitus 2+analís 2*: more or less long, reaching or not reaching the hind margin.

**Axillaris** ( $ax$ ), *axillary vein*, or *analís 3*: very indistinct, never reaching the hind margin.

The cross-veins are the following:

**Humeral** or *basal cross-vein*: less important, at the base of the fore border between the costa and subcosta.

**Radio-media** ( $r-m$ ), *small cross-vein*, or *anterior* or *median cross-vein*: very important, situated towards the middle of the wing, between  $r_{4+5}$  and  $m$ ; long or short, oblique or perpendicular, straight or more or less curved; placed before, on, or after the middle of  $IM_1$ .

**Medio-cubitalis** ( $m-cu$ ), *hind posterior cross-vein* or *median cross-vein*: situated on the posterior portion near the hind margin between  $m$  and  $cu$ ; straight or curved, long or short, oblique or perpendicular

parallel or not with r-m. The distance between it and the latter is very important, in relation to the position of r-m.

**Basal, anterior basal or discoidal cross vein, or media 3:** situated in the middle of the basal border, between m and cu, less important.

**Cubito-anal (cu-an), anal or posterior basal cross-vein, or cubitus 2, or cubitus 1+2:** situated at the basal border below the preceding, between cu and an, very important; straight, convex or concave, or with a very characteristic deep median bend as in the genus *Ceratitis*; the lower portion of this cross-vein sometimes very prolonged as in the genus *Dacus* (s. lat.)

The cells are as follows:

**Costal cell (C):** at the base of the fore border, between the costa and subcosta; it is divided into two cells by the humeral cross-vein, the basal section not being important and called as the *first costal cell*, and the second section more or less important and known as the *second costal cell* which is short or long and broad or narrow.

**Subcostal cell (Sc), or mediastinal cell:** at the fore border below the preceding between sc and  $r_1$ ; not important, very often small and sometimes very narrow and indistinct. The apical border of this cell, however, is dilated and forms a callosity known as the **Stigma (st) or pterostigma**; important in its form and colouration; short or long, often very much prolonged.

**$R_1$  cell ( $R_1$ ), or marginal or subcostal cell:** in the distal portion of the fore border, between  $r_1$  and  $r_{2+3}$ , narrow or broad, more or less elongated in the apical portion.

**$R_3$  cell ( $R_3$ ), or submarginal or cubital cell:** below the preceding and between  $r_{2+3}$  and  $r_{4+5}$ , narrow or broad, usually broadened toward the wing tip.

**Radial cell (R), or first basal cell:** in the middle, between  $4_{4+5}$  and m, from the base to r-m; more or less long, widened or not at the end.

**$R_5$  cell ( $R_5$ ) or first posterior cell:** between  $r_{4+5}$  and m, from r-m to the wing margin, parallel-sided or widened outwards, or very rarely narrowed at the end.

**Media cell (M)**, or *second basal cell*: between m and cu, from the bifurcation of these veins to the basal cross-vein; more or less broad, more or less widened at the end, sometimes very much dilated.

**I Media<sub>1</sub> cell (IM<sub>1</sub>)**, or *discoidal* or *discal cell*: between m and cu, from the basal cross-vein to m-cu; more or less long and widened at the end or, very rarely, narrowed at the end.

**II Media<sub>2</sub> cell (IIM<sub>2</sub>)**, or *second posterior cell*: in continuation of the preceding and between the same veins, from m-cu to the hind margin of the wing; usually widened.

**Cubitus cell (Cu)**, or *anal* or *third basal cell*: below M, between cu and an, from their bifurcation to cu-an; this cell is very important with regard to the shape of its inferior angle which is rarely obtuse, usually being drawn out into a point which is narrow or broad; shorter than M or of equal length or longer, and sometimes much prolonged, reaching almost to the hind margin of the wing.

**Cubitus 1 cell (Cu 1)** or *second posterior cell*: in continuation of the preceding and between the same veins, from cu-an to the hind margin of the wing. In the subfamily Dacinae it sometimes bears shaggy hairs on the externo-anterior border along cu.

**Anal (An)** or *axillary cell*, or *third posterior cell*: at the base of the hind margin of the wing, between the anal vein and the hind wing-margin; this cell is partly fused with the preceding and with the axillary lobe (*allula*), and may be divided into two cells by an indistinct axillary vein.

The pattern of the wings is also of great importance in the distinction of the species and even of the genera, in the latter case some caution is, however, necessary. The colouring is due to a tint in the wing-membrane itself, but there is an exception as in the Genera, *Schistopterum* and *Rhabdochaeta*, which have some colour due to peculiarly shaped and coloured hairs on the surface. The patterns may be classified in four types, the striped type, the banded type, the reticulate type and the reticulate-banded type.

The *striped type* is the simplest one, in which the ground colour is always hyaline, with one distinct black or blackish costal longitudinal

stripe and also almost always with one some coloured oblique stripe along the anal vein, and sometimes with one or two very short transverse bands; these are to be found mainly in the subfamily Dacinae.

The *banded type* is well-developed in the so-called "rivulets" of many species; in typical cases the wings are hyaline with some transverse or radiate dark coloured bands; an exaggeration of this type is shown by the species which have black wings with hyaline indentations and spots, or with complete apical bands; nearly all of the wings of Trypetinae belonging to this type.

The species which have almost entirely black wings, with less numerous scattered rather distinct hyaline or subhyaline spots, show a passage into the *reticulate type*. In this type the wings should be considered as black with numerous approximate hyaline spots, which break up the black colouring into a net-like or reticulate pattern; on account of the form and size of these spots the net may be more or less closed, and sometimes quite broken up into brown isolated streaks. The so-called "star-shaped" pattern is a special case of this type; species of Tephritinae almost always bear wings of this type.

In the last type the wings possess numerous approximate hyaline dots and some broad hyaline bands as in *Acrotaenia* and also in *Paratephritis* SHIRAKI.

The colouring of the pattern varies from yellow or brown to black; in rare instances reddish spots are to be observed, however this colour may not be found in fresh specimens. I have found the reddish colour in many old specimens of *Rhabdochaeta* and *Schistoptera*, but never in a fresh one.

## LEGS

(Fig. 9)

Usually short and robust, but sometimes long and slender, tomentose and pubescent; front femora nearly always with a row of bristles on the externo-inferior side, and rarely with a row of short spines along the inferior margin; middle tibiae usually with one spur, sometimes

with two or more; hind tibiae often with a row of bristle-like hairs or spine-like bristles.

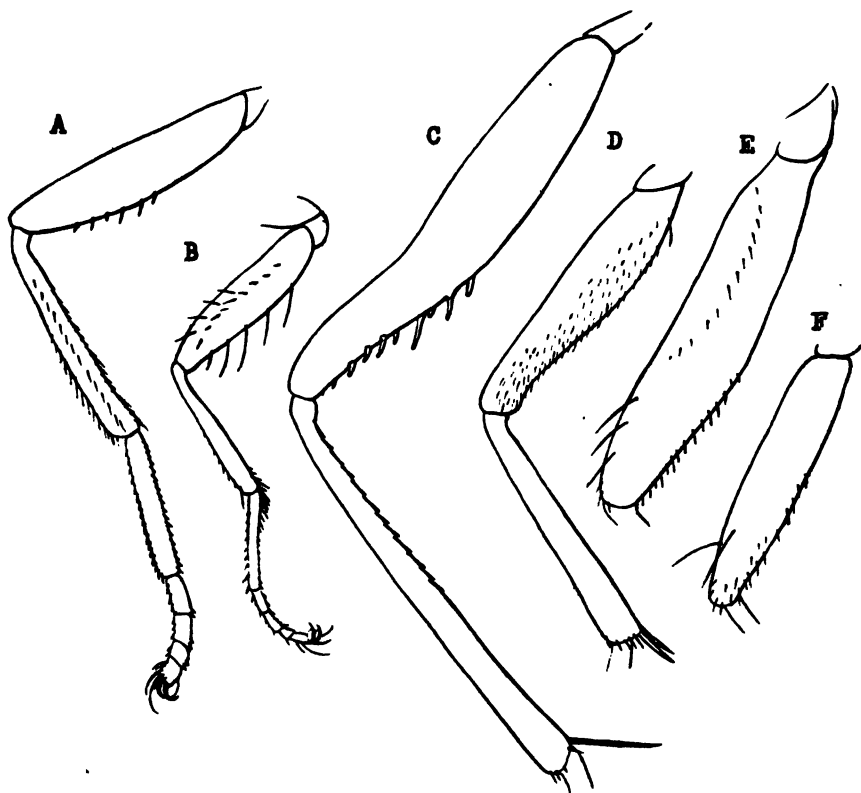


Fig. 9.

Legs—lateral view.

- A. *Meracanthomyia arisana* ♀—left anterior leg; B. *Acroceratitus plumosa* ♀—left anterior leg; C. *Adrama apicalis* ♀—right femur and tibia; D. *Sophira excellens* ♀—right femur and tibia; E. *Callistomyia pavonina* ♀—right femur; F. *Xyphosia punctigera* ♀—right femur.

### CHAETOTAXY.

(Figures 10, 11 and 12)

The chaetotaxy of the head and thorax is one of the most important characters in this family, especially the position of the bristles, their number and form.

1. **Fronto-orbital bristles (or):** A row on each lateral border of the frons, being variable in number and form, and divided into *superior fronto-orbital* (s. or, or ors) and *inferior fronto-orbital* (i. or, or ori); the former consisting of from one to three pairs bent backwards or out-

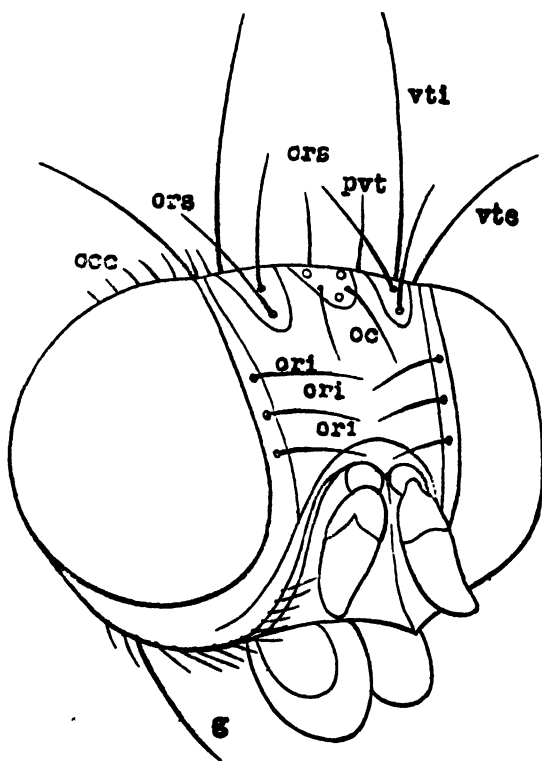


Fig. 10.

Head of a Trypetid, showing typical chaetotaxy.

wards and placed on the vertical calli, and the latter consisting of from one to four or more pairs bent forwards or inwards and placed on the frontal callosities; the *inferior fronto-orbital bristles* very rarely entirely wanting.

2. **Ocellar bristles (oc):** One or, very rarely, two pairs on the ocellar triangle, strong, weak or absent, always directed forwards.

3. **Vertical bristles (vt):** Two pairs on the vertex behind the each vertical callus, strong, the inner pair (i. vt, or vti) being very long and always black or blackish,

and the outer pair (e. vt, or vte) less long and black or often whitish, if so they are almost always thick.

4. **Postvertical bristles (pvt):** Usually only one pair but, very rarely, two on the vertex behind the ocellar triangle, short and weak, parallel or divergent and never crossed, black or whitish; very rarely wanting.

5. **Genal bristle (g):** On the cheeks, more or less prominent, or, very rarely, two or three, usually black but in some species whitish.

6. **Occipital row (occ):** Along the posterior orbits from vertex to chin, rarely wanting. This bristle row is considered of a great systematic value as it may be formed either by black, thin, pointed bristles or by whitish, thick, obtuse bristles.

7. **Scapular bristles (scp):** Two pairs of small bristles on the anterior margin of the thorax, sometimes indistinct but never obsolete ;

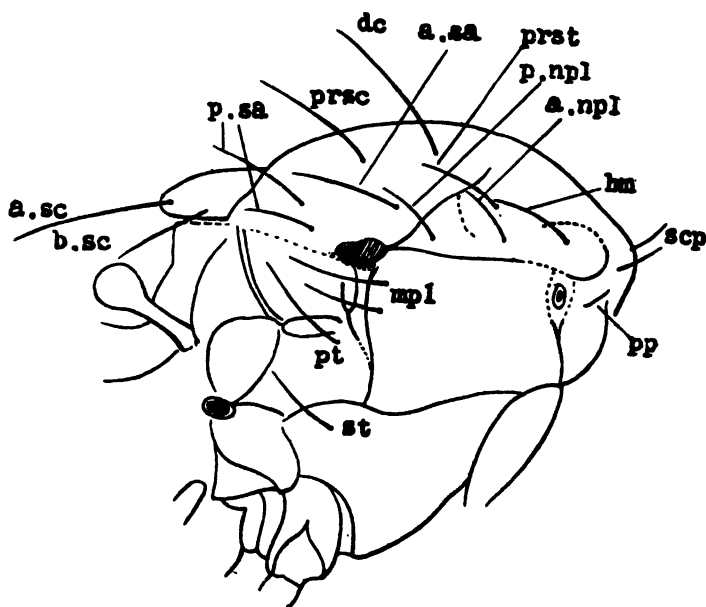


Fig. 11.

Thorax of a Trypetid (lateral view), showing typical chaetotaxy.

one pair is median or *acrostichal* and the remaining lateral or *dorso-central*; black or very rarely whitish.

8. **Dorsocentral bristles (dc):** One pair or very rarely more than two, in the dorso-central region usually between the transverse suture and the scutellum but one of which very rarely is standing before the suture, sometimes wanting.

9. **Praescutellar bristles (prsc):** One pair on the hind border in front of the scutellum, more or less approximate, very rarely wanting, or two pairs.



10. **Humeral bristle** (hm): On the humeral callus, very rarely wanting.

11. **Notopleural bristles** (npl): Two bristles inserted above the dorso-pleural suture in the notopleural depression, never absent; the anterior one, behind the humeral callus, called "*anterior notopleural bristle* (a. npl)"; the posterior one in front the wing-base named "*posterior* (p. npl)".

12. **Praesutural bristle** (prst): One before the suture and above the notopleural depression, sometimes wanting.

13. **Supra-alar bristles** (sa): Consisting of three, the anterior ones (a. sa) being very rarely two or absent, and the two posterior bristles (p. sa), one above the root of the wing and one on the postalar callus, always present and sometimes called "*postalar bristles*".

14. **Propleural bristle** (pp) or **prothoracic bristle**: On the prothorax before the prothoracic stigma, usually wanting or very weak, or rarely more than two.

15. **Mesopleural bristles** (mpl): One or two or more on the posterior border of the mesopleura, sometimes accompanied by some bristly hairs.

16. **Pteropleural bristle** (pt): On the pteropleura, under the base of the wing, usually one rarely two or more.

17. **Sternopleural bristle** (st): On the sternopleura, below the sternopleural suture, very rarely wanting.

18. **Scutellar bristles** (sc): Along the posterior margin of the scutellum, usually consisting of two pairs; one near the base, called "*basal scutellar*

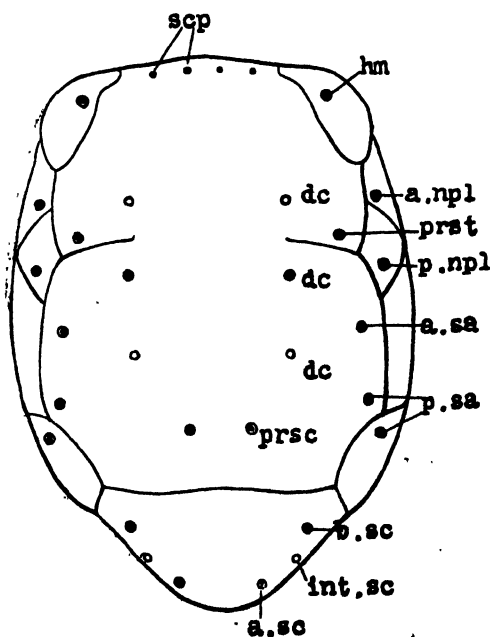


Fig. 12.

Thorax of a Trypetid (dorsal view),  
showing typical chaetotaxy.

*bristles* (b. sc)", usually stronger than the remainings, divergent, very rarely wanting; one near the apex, "*apical scutellar bristles* (a. sc)", usually weaker than the basal pair, divergent, parallel, or convergent or even crossed, more often absent. Sometimes there are some *intermediate* pairs (int. sc) of bristles between the basal and the apical.

The bristles of the thorax may be strong and black, some of them rarely being whitish, yellowish or brownish.

### DISTRIBUTION

The Trypetidae is a rather large family, including more than 1000 known species up to the present time and this number increasing from year to year. It has a wide distribution throughout the globe, excepting in the Arctic and Antarctic regions; the number of species might naturally be increasing from the north to the south. From the Palaearctic region about 350 species known, belonging to more than 70 genera; from the Athiopian about 210 species, more than 60 genera; from the tropical about 300 species (it seems to me highly probable that further study will reveal more than 500 species), more over than 80 genera; from the Australian (including Philippine) about 150 species, more than 70 genera; from the Nearctic about 250 species, more than 40 genera; from the Neo-tropical about 250 species, more than 40 genera of which 28 are typical.

The tropical, Australian and Athiopian regions have numerous *Dacinae* and *Trypetinae*, while the Palaearctic region has abundant *Tephritinae*.

The our fauna of this family is as yet rather little known, especially in Sachalin, Corea and Japan. In the present paper 165 species are described and their geological distribution is as shown in the following table:







47. *Calosphenisca 5-maculata*, sp. nov. . . . .
48. *Pseudoepheniscus angulatus*, HENSEL . . . . .
49. *Pseudoepheniscus connexus*, HENSEL . . . . .
50. *Pseudoepheniscus superfluctus*, EDERLEIN . . . . .
51. *Pseudoepheniscus fossatus*, FAURIGUS . . . . .
52. *Pseudoepheniscus alboocellatus*, v. d. WULP . . . . .
53. *Pseudoepheniscus inflatus*, sp. nov. . . . .
54. *Prospeniscus* (n) *miyakei*, sp. nov. . . . .
55. *Neanomoea approximata*, HENSEL . . . . .
56. *Neanomoea rufescens*, HENSEL . . . . .
57. *Neanomoea farinosa*, HENSEL . . . . .
58. *Phagocarpus purnaudus*, HARRIS . . . . .
59. *Phagocarpus formosanus*, sp. nov. . . . .
60. *Phagocarpus connexus* sp. nov. . . . .
61. *Phagocarpus vulgaris*, sp. nov. . . . .
62. *Machomyia caudata*, HENSEL . . . . .
63. *Hemilea praestans*, BEZZA . . . . .
64. *Hemilea formosana*, sp. nov. . . . .
65. *Hemilea dimidiata*, O. C. SFA . . . . .
66. *Hemilea longistigma*, sp. nov. . . . .
67. *Parahypeniscus* (n) *polyfasciata*, MIYAKE . . . . .



88. *Acididella arisanica*, sp. nov. . . . .
89. *Acididella kogoshimensis*, MIYAKE. . . . .
90. *Acididella mushanensis*, sp. nov. . . . .
91. *Myiobia marumoi*, MIYAKE . . . . .
92. *Myiobia formosana*, sp. nov. . . . .
93. *Myiobia feronigra*, HENDEL . . . . .
94. *Trypeta trifasciata*, sp. nov. . . . .
95. *Trypeta hamifera*, LIEW . . . . .
96. *Trypeta lateosoda*, sp. nov. . . . .
97. *Paranyctelia* (n) *tateuchii*, sp. nov. . . . .
98. *Anastrephoides matsuuraei*, sp. nov. . . . .
99. *Meganyctelia* (n) *jozana*, sp. nov. . . . .
100. *Phantasiella cytharica*, HENDEL . . . . .
101. *Callitomyia peronina*, BEZZI. . . . .
102. *Acanthoneura formosana*, ENDELEIN . . . . .
103. *Acanthoneura trigona*, MATSUMURA . . . . .
104. *Acanthoneura pteropleuralis*, HENDEL . . . . .
105. *Diarrhagma unicolor*, sp. nov. . . . .
106. *Ricnopilona spectiosa*, HENDEL . . . . .
107. *Ricnopilona femoralis*, sp. nov. . . . .
108. *Phorellionoma kezachada*, HENDEL . . . . .









The above is based mainly upon my own research, supplemented by the studies of BEZZI, HENDEL and others.

In the genera recorded in this table *Matsumurania*, *Proanoplomus*, *Paragastrozona*, *Parahypenidium*, *Pseudacidia*, *Acidia*, *Myiolia*, *Trypeta*, *Paramyiolia*, *Anastrephoides*, *Magnimyiolia*, *Ortalotrypeta*, *Tetramyiolia*, *Chaetostomella*, *Actinoptera*, *Ensina*, *Xyphosia* and *Paranoeëta* may be considered as belonging to the Palaearctic genera; *Meracanthomyia*, *Adrama*, *Taeniostola*, *Gastrozona*, *Pseudospheniscus*, *Vidalia*, *Callistomyia*, *Diarrhegma*, *Rioxoptilona*, *Hexacinia*, *Sophira*, *Platensia* and *Rhabdochaeta* are of the Tropical genera; *Nitobeia*, *Pseudopelmatops*, *Zeugodacus*, *Tetradacus* *Paranoplomus*, *Acroceratitis*, *Paratrirhithrum*, *Acrotaeniostola*, *Carpophthorella*, *Calosphenisca*, *Prospeniscus* *Neanomoea*, *Machaomyia*, *Poecilothoea*, *Moritsugia*, *Phantasmia*, *Phorelliosoma*, *Acidioxantha*, *Okuniomyia*, *Pseudorellia*, *Paratephritis* and *Protephritis* are mainly found in Formosa, and may be called Subtropical genera, some of which are probably derived from the Palaearctic ones and some others from the Tropical; *Parazeugodacus* and *Paratridacus* may be derived from the Tropical genera but belong to the Oceanic genera; *Prospilocosmia* and *Mellesis* are the Philippine-genera; *Ptilona* may be the Tropic+Philippine genus; *Chaetodacus* may be the Tropic+Australian+Philippine genus; *Phagocarpus*, *Hemilea*, *Acidiella*, *Acanthoneura* and *Euphranta* are found in both the Tropical and Palaearctic regions; *Staurella* and *Elaphromyia* may be the Tropic+Athiopian genera; *Oedaspis* is found in the Palaearctic, Athiopian and Australian regions; *Spheniscomyia*, *Oxyaciura*, *Sphenella* and *Campiglossa* in the Palaearctic, Athiopian and Tropical regions; *Paroxyna* and *Icterica* in the Palaearctic, Nearctic and Neotropic regions; *Spathulina* and *Trypanea* in the Palaearctic, Athiopian, Tropical and Australian regions, the latter genus being found in the Philippines instead of Australia; *Tephritis* and *Euribia* are rather cosmopolitan ones.

Of the 165 species (including their varieties), tabulated above, 7 species belonging to the subfamily Trypetinae are found in Sachalin, of which the two species, *Myiolia flavonigra* HENDEL and *Trypeta hamifera* LOEW may be Palaearctic species, and others are new; only three

in Corea, of which one is a new species, and *Acanthoneura pteropleuralis* HENDEL and *Campiglossa hirayamae* MATSUMURA may be Palaearctic, the former being found from the Amur to Japan, while the latter belongs to the Japanese species distributed as far as to Formosa; 21 in Hokkaido, of which 13 species are new, and others which may be nearly all Palaearctic, with the exception of *Campiglossa longipennis* SHIRAKI being distributed from the plain of Hokkaido to Formosa, and of the Formosan species *Ensina lacteipennis* HENDEL which has been very doubtfully collected in Hokkaido; 27 species in Honshu, of which 13 are new and the remaining may be mostly Palaearctic, excepting of *Zeugodacus depressus* SHIRAKI *Phagocarpus vulgaris* SHIRAKI and *Spheniscomyia sexmaculatus* MACQUART which may rather be Tropical; two species, *Hemilea dimidiata* O. COSTA and *Campiglossa hirayamae* MATSUMURA, in Shikoku are without doubt Palaearctic; 14 in Kiushu may be mostly Palaearctic, of which the *Chaetodacus hyalinus* SHIRAKI, *Tetradacus tsuneonis* MIYAKE, *Acidiella kagoshimesis* SHIRAKI and *Paratephritis fukaii* SHIRAKI, are restricted to this country, and others which are also found in Honshu, with the exception of *Zeugodacus scutellatus* HENDEL and *Oedaspis japonica* SHIRAKI, the former being distributed south to Formosa through the Islands, Amami-Oshima and Okinawa and the latter being found far apart in Hokkaido; two species in Amami-Oshima, three in Okinawa, 5 in Yayeyama, one in Izu-Oshima, 1 in Hachijo and 1 in Ogasawara all may be Tropical, out of which four species (3 are new) are the confined ones; only one *Dacinae*, *Zeugodacus tibialis* SHIRAKI, in Kashoto is a valid Formosan species, found also in Kotosho; 13 species in Kotosho have never been yet found in the north above Kiushu of which two new species, *Zeugodacus okuni* and *Calosphe-nisca 5-maculata*, SHIRAKI, and two new varieties, *Prospilocosmia punctata kotoshoensis* and *Trypanea amoena kotoshoensis* SHIRAKI, are confined to this small Island, and other nine species are distributed in Formosa but not in other countries, while *Sphenella indica* and *Spathulina acroleuca* SCHINER originated in India; in the main Island of Formosa are found 113 species, of which 89 may be restricted to the Island, 48 species are new, 5 species are also found in Kotosho or Kashoto, while the remain-

ing with a few exceptions may be common in the Oriento-Tropical region.

### Key to the Subfamilies

1. Chaetotaxy reduced, wanting the ocellar, the inner occipital, the post-vertical, the humeral<sup>(2)</sup>, the praesutural, the dorsocentral and the sternopleural; the bristles of occipital row nearly wanting. The 6th tergite of female very much shortened, always distinctly shorter than the preceding one. Squamulae of thorax and wing very narrow, not well-developed.....*Dacinae*, BEZZI.
11. Chaetotaxy complete, but the ocellar, the postvertical, the praesutural, the dorsocentral and the sternopleural sometimes not developed. The 6th tergite of female well-developed, shorter or longer than the preceding one. Squamulae well-developed, but that of thorax sometimes very narrow.
2. The 6th tergite of female always shorter than the 5th. The bristles of occipital row rather fine, sharply pointed, almost always black or rarely yellowish. The upper superior fronto-orbital bristle not directing inwards; dorsocentral bristle not near the transversal suture, rarely so, as in the genus *Aciura*. Wings never reticulate nor numerously spotted by white colour.....*Trypetinae*, HENDEL.
22. The 6th tergite of female longer than or as long as or very rarely a little shorter than the 5th. The bristles of occipital row strong, almost always obtuse at the tip and yellowish, but in some genera fine, sharply pointed and black as in *Pseudorellia* m. and *Chaetostomella*. The upper superior fronto-orbital bristle sometimes directing inwards; dorsocentral bristles at or just behind the transversal suture<sup>(3)</sup>. Wings almost always reticulate or numerously spotted by white colour or sometimes banded .....*Tephritinae*, HENDEL.

### Subfam. *Dacinae*, BEZZI

Memoirs of the Indian Museum, III., p. 84 (1913).

*Dacina*, HENDEL, Die Bohrfliegen Sudamerikas, p. 4 (1913).

*Dacinae*, EFFLATOUN, A monograph of Egyptian Diptera, p. 17 (1924).

It is distinguished by the reduced chaetotaxy of the head and thorax, and also by the strongly chitinised body. Yellowish brown to black, with blackish or yellowish markings; wings almost always hyaline,

(2) In the genus *Matsumurania* m. the humeral bristle is very strong.

(3) If the dorsocentral bristles are two pairs, the anterior pair is very often placed on before the suture.

with the brown to black costal stripe and rarely with the same-coloured bands; reticulated wings never found.

Head usually narrower than or rarely as broad as the thorax, not depressed nor compressed, rather globular, in the profile shorter or very rarely longer than high; antennae elongate, as long as or longer than the face, usually bare or very rarely pubescent. Ocellar and post-vertical bristles wanting, the both very rarely present but very fine; bristles of occipital row very weak and indistinct or wanting; humeral, praesutural and dorsocentral wanting, the former being very rarely present; anterior supra-alar and praescutellar sometimes wanting; pteropleural usual weak; sternopleural very often wanting. Scutellum with two or four bristles; if the bristles are only two, the basal pair being absent. Abdomen rather broad, usually oval and strongly convex, in the female with the last tergite (6th) hidden or produced or wanting. Wings with the subcostal vein very approximate<sup>(4)</sup> to  $r_1$ , and often very little distinct; the first three longitudinal veins usually very approximate, the others distant;  $r-m$  long and usually oblique, or short and not oblique. Second basal cell usually very much dilated, and short at the base; anal cell narrowed, its inferior angle being usually drawn out into a very long point, much longer than the second basal cell. Legs rather simple, usually yellowish, often with black or dark portions; front femora without bristles below or very rarely bristly.

The species are mostly tropical or subtropical and live almost exclusively in the old world, but at the present time some of them are introduced into America. The larvae naturally live only in fruits of various kinds, and are never gall-makers.

#### Key to the Japanese Genera.

1. Humeral bristle present.....*Matsumurania*, nov.
11. Humeral bristle wanting.
  2. Body elongate; arista pubescent or bare.
  3. Arista pubescent.
  4. Femora spinose on the underside; head globular, in profile shorter than high.

(4) In the genus *Matsumurania* m., sc is distinctly distant from  $r_1$ .

- 5. Antennae about twice as long as face, porrect or pendant .....  
..... *Meracanthomyia*, HENDEL.
- 55. Antennae about as long as face, pendant ..... *Adrama*, WALKER.
- 44. Femora not spinose; head somewhat depressed, with very long, cylindrical lateral process, in profile longer than high.....  
..... *Pseudopelmatops*, nov.
- 33. Antennae nearly as long as face, with arista bare; anterior femora spinose on the underside..... *Nitobeia*, nov.
- 22. Body not elongate, usual; arista bare.
- 3. Wings of male with a well-developed supernumerary lobe, and with more or less conspicuous black shaggy hairs along the front border of the apical portion of anal vein near the pointed lower angle of anal cell. Thorax with praescutellar bristles. Third abdominal tergite of male with a ciliation of some bristle-like hairs.
- 4. Anterior supra-alar bristle not developed; scutellar bristles only one pair..... *Chaetodacus*, BEZZI.
- 44. Anterior supra-alar bristle well-developed; scutellar bristles two pairs ..... *Zeugodacus*, HENDEL.
- 33. Wings with no supernumerary lobe nor shaggy black hairs.
- 4. Thorax with praescutellar bristles and one well-developed anterior supra-alar bristle; scutellar bristles two pairs.
- 5. 3rd tergite of male with a ciliation of bristles. ....  
..... *Parazeugodacus*, nov.
- 55. 3rd tergite of male without any bristle-like hairs; ovipositor flattened..... *Paratridacus*, nov.
- 44. Thorax without praescutellar bristles; scutellar bristles one pair; 3rd tergite of male with a ciliation of bristle-like hairs.
- 5. Thorax with two anterior supra-alar bristles which are distinctly shorter and thinner than the posterior ones; anal brown stripe not developed; ovipositor large, bottle-shaped at base; first joint of antennae small, shorter than the second.... *Tetradacus*, MIYAKE.
- 55. Thorax with one poor anterior supra-alar bristle; anal brown stripe developed; ovipositor small; first joint of antennae slender, as long as the second ..... *Melleis*, BEZZI.

# I. Genus MATSUMURANIA, nov.

This genus is easily distinguished from all the genera, belonging to the subfamily *Dacinae*, by the strong humeral bristle and by the wing-pattern.



Head shining, not tomentose, very slightly narrower than thorax, shorter than wide or higher than long; frons about as wide as eye, longer than wide, strongly produced forwards, distinctly concave, sparsely black-pubescent all over the surface, with the eye-margins not distinct and very slightly divergent; lunula strongly sunk; vertex strongly rounded behind, with the very large more or less oblong ocellar triangle and with the narrow pointed vertical calli, the latter not reaching the middle of frons and not well-defined; face about as long as wide, distinctly narrowed above, distinctly convex, with the broad and deep antennal grooves which are reaching the mouth-edge, and with the narrow eye-margins which are the same width throughout the whole length, in profile straightly oblique, about  $90^\circ$  to the frons, nearly as long as the frons; back of the head strongly convex, very strongly produced below, with the distinct lateral swellings, sparsely black-pubescent nearly all over the surface; cheeks about  $\frac{1}{3}$  as high as eye, very short; genal groove very deep, continued to the antennal groove; mouth-edge in profile nearly horizontal and very slightly concave, the lateral swellings of the back of the head being very prominently produced beneath the mouth edge. Eyes in profile rather oblong, about twice as long as wide, or about half as wide as the length of head, with the anterior margin strongly convex and the posterior margin moderately, the upper angle being distinctly broader than the lower one, very sparsely and microscopically pubescent. Antennae long, exceeding the upper mouth edge; first joint very short, moderately bristly along the apical margin; second joint about twice as long as wide, gradually broadened apically, moderately bristly, without the distinct median seta; 3rd joint about as long as three times the width, or distinctly twice as long as the second, distinctly narrowed toward the very narrowly rounded apex, with the upper margin nearly straight, distinctly pollinose; arista nearly as long as the antenna, distinctly pubescent. Palpi short, with the upper margin straight and the lower margin obtusely rounded in the middle, its apex rather broadly rounded and its base very narrow; basal joint indistinct. Proboscis very short and broad.

Thorax long, shining, non-tomentose; mesonotum a little shorter than twice the width, the suture being very distinct but interrupted in the middle, densely covered with fine pubescence; humeral calli oblong, covered with many fine pubescence; notopleural calli bare from pubescence; scutellum triangular, in the middle very sparsely pubescent and along the lateral margins distinctly bare; pleura sparsely pubescent.

Abdomen as long as the thorax, oblong, broadest behind the middle, non-tomentose, shining but densely pubescent; 6th tergite about  $\frac{1}{3}$  as long as the preceding one; basal joint of ovipositor depressed, narrow and elongate, nearly as long as the abdomen, covered with many fine hairs.

Wings long, glass-hyaline, with dark apical patch; costal spine indistinct; subcostal vein well-separated from  $r_1$  which is ending distinctly behind the middle of the anterior margin; stigma narrow and long, pointed, longer than half the second costal cell;  $r_{2+3}$  nearly straight;  $r_{4+5}$  also nearly straight, very slightly divergent with  $r_{2+3}$ , with a very few fine bristles toward the base on the both sides;  $m$  nearly parallel to  $r_{4+5}$ ; axillary vein very indistinct;  $r-m$  straight, perpendicular, behind the middle of  $1M_2$ ;  $m-cu$  straight, oblique, the inferior angle of  $1M_2$  being pointed; anal cell shorter than the second basal cell, its inferior angle more or less pointed not produced. Halteres long, its stem very narrow and slender; squamulae linear.

Legs narrow and long, densely pubescent, without distinct bristles; middle tibiae with a single long spur.

Chaetotaxy incomplete: Ocellar, postvertical, occipital, praesutural, dorsocentral, sternopleural and pteropleural bristles wanting; fronto-orbital 1:4, short, the inferior pairs directed inwards and the superior pair hindwards; vertical pairs strong and long, the outer pair being shorter; genal bristle very fine; humeral bristle long and strong; praescutellar distinct, just front this bristle there is also a short bristle; notopleural two, very long and strong; supra-alar bristles 3, moderately long, the anterior being one and the posterior two; scutellar two pairs, nearly the same length, their apical pair divergent; prothorax with some bristle-like hairs.

The present genus may be included in the subfamily *Trypetinae*, as it bears the humeral bristle. It is, however, very probable that this new genus is a valid one belonging to *Dacinae*, because in the chaetotaxy of head and also in the very narrow squamulae it is quite identity with all the genera of the latter subfamily.

1. *Matsumurania sapporensis*, MATSUMURA

(Fig. 13; Pl. XIV, fig. 6)

Thous. Ins. Jap. Add. II., p. 422, pl. XXIII, fig. 18 (*Rhagoletis* (1916).

A shining blackish species, of large elongate-shaped.

♀. Frons blackish brown, with the eye-margins narrowly yellow, black pubescent; lunula orange-yellow; vertex brown, with the large blackish ocellar triangle, and with the pale yellow vertical calli; face strongly shining, light yellow, with two long blackish castaneous longi-

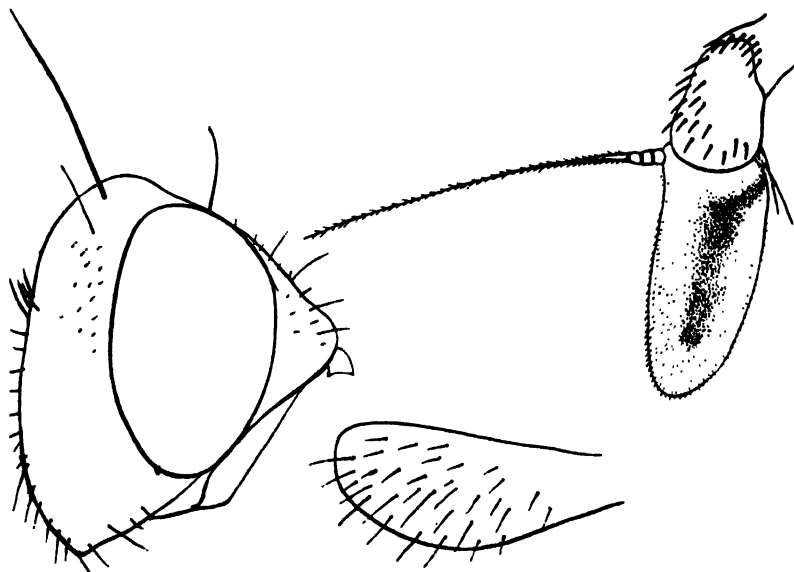


Fig. 13.

*Matsumurania sapporensis*, ♀,  $\times$  ca 35. Palpus and antenna,  $\times$  ca 60.

tudinal streaks, each placed in the antennal groove, the eye-margins being more or less reddish; back of the head dark castaneous, with the

eye-margins light yellow, the coloring becoming very broad beneath, black-pubescent; cheeks yellow, more or less reddish tinged, with one distinct black dot just below the lower angle of eye; genal groove yellowish brown; vibrissal edge indistinctly brown bristly. Antennae reddish brown, black bristly, with the third joint slightly darkened; arista brown, with the base light yellow, black pubescent but yellow in the yellowish portion. Palpi reddish yellow, furnished with some fine black bristly hairs; proboscis reddish yellow.

Mesonotum blackish castaneous, black pubescent, with three yellow streaks of which the median one is entire and becomes very narrow towards the anterior end, their sublateral pair extends from just behind the middle of praesutural disc to the junction of scutellum; humeral and notopleural calli light waxy yellow, the former covered with black pubescence; scutellum castaneous, with the broad lateral margins light waxy yellow; pleura blackish castaneous, black-pubescent, with the spiracle, the posterior marginal border of mesopleuron and the upper marginal border of sternopleuron light yellow; postscutellum black.

Abdomen dark castaneous, black-pubescent, nearly no distinct bristles; basal joint of ovipositor in colour and pubescence as in the abdomen.

Wings glass-hyaline, with the apical half blackish, in this colored area there are three glass-hyaline spots, of which the anterior one is very elongate triangular and extends from the costal margin just behind the stigma to the anterior end of m-cu; the posterior two are oblong, one near the apex of 1M<sub>2</sub> and the rest near the base of IIM<sub>2</sub>. Halteres and squamulae yellowish.

Legs light yellowish brown, black-pubescent; femora with an ill-defined very broad blackish apical ring which is very faint in the front femora.

Length: Body (without ovipositor) 8 mm; wings 8 mm.

Hab. Japan - Sapporo (VI).

A single female (type) preserved in the Entomological Museum of Hokkaido Imperial University, Sapporo, Japan.

II. Genus **MERACANTHOMYIA**, HENDEL.

Wiener Ent. Zeit. XXIX., p. 107 (1910).

*Meracantha*, MACQUART, Dipt. exotiques, Suppl. IV., p. 283, Pl. 26, fig. 9 (1850).  
Praeocc. by KIRBY in *Tenebrionidae*.

Very near to *Adrama* WALKER, but distinguished by the very long antennae, absence of basal scutellar bristles, not bristled  $R_{4+5}$ , well-developed frontal lunula, and well-defined antennal prominence.

Genotype: *Meracantha maculipennis*, MACQUART.

Head rather spherical, in profile higher than long; antennal prominence developed; lunula large; vertex rather concave; face rather short, with conspicuous eye-margins; cheeks narrow; back of the head swollen; mouth-edge straight and horizontal, the oral cavity being very broad. Antennae porrect, strongly elongated, more than twice as long as face; first joint conspicuous and long; third joint very long, with plumose arista. Maxillary palpi and proboscis rather small. Vertical bristles two pairs, parallel; ocellar and postvertical bristles wanting; superior fronto-orbital bristles one pair, inferior ones two; occipital and genal bristles reduced.

Thorax narrow and long, as broad as head, with rather deep transversal suture; notopleural bristles two, of which the posterior one is very distinct; post-alar bristle conspicuous; mesopleural bristle small; scutellar bristles one pair (apical).

Wings rather narrow, but the marginal cell rather broad; radius 2+3 curved; radius 1 bristled, radius 4+5 not bristled; cross veins short, not oblique; anal cell with the lower apical angle strongly pointed and moderately produced.

Legs elongate; femora slightly thickened, armed with two rows of short spines, middle femora more thickened and longer than the others.

Abdomen narrower and longer than the thorax, its basal portion more or less constricted; ovipositor large and conical; hypopygium very small and globular.

Before this only two species have been found in the world; now an additional species may be distinguished by the following key:

## Key to the Species known to me.

1. Wings with a broad black cross-band; costal margin very narrowly tinged with black; r-m short, not oblique.
2.  $r_{4+5}$  and m divergent, the latter at the apical half strongly curved; r-m a little before the middle of 1st M<sub>2</sub>. Blackish band of wings with a branch along the M. Hind tibiae at the basal half and hind femora at the apex dark ..... *gamma*, HENDEL.
22.  $r_{4+5}$  and m slightly curved and parallel to each other; r-m a little beyond the middle of 1st M<sub>2</sub>. Blackish band of wings without branch, but its anterior half conspicuously broadened outwards. Hind tibiae nearly entirely dark; hind femora on the outer side of apex with an indistinct dark elongate spot ..... *arisana*, sp. nov.
11. Wings with a broad blackish costal band and an apical spot; r-m long and oblique;  $r_{4+5}$  nearly straight; m undulate after m-cu... *maculipennis*, MACQUART.

2. *Meracanthomyia arisana*, sp. nov.

Fig. 14; Pl. I, fig. 1)

Black, moderate in size; closely allied to *Merac. gamma*, HENDEL, from Ceylon. It is distinguished by only one supra-alar bristle, by the venation, especially m which is parallel to  $r_{4+5}$ , and by the shape of the blackish band of the wings, as well as by the hind tibiae being uniformly dark coloured.

♀. Head strongly convex, as wide as thorax. Frons distinctly widened forwards, where it is about  $\frac{1}{3}$  as wide as the head, orange-yellow, but with the posterior half more or less velvety black; antennal prominence developed, distinctly narrowed forwards, the lunula large, light waxy yellow, with the posterior margin black; vertex black. Face rather narrow, slightly broadened below, light waxy yellow, with one pair of very large black round spots which are extending to near the antennal base and pointed at the upper tip, and which are nearly united with each other in the middle line of the face but extending to the outer margin of antennal groove; in profile moderately concave in the middle; eye-margins moderate in width, distinctly narrowed below, moderately whitish tomentose. Back of the head strongly convex, black, except for the very narrow eye-margin yellow, this colour not extending downward to the cheek; cheeks of moderate size, black. All the

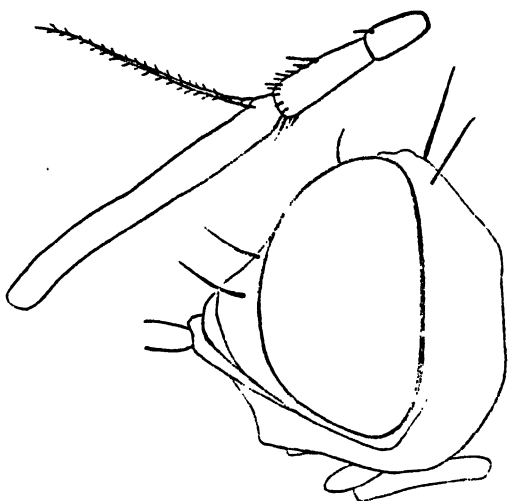


Fig. 14.

*Meracanthomyia arisana*, sp. nov. ♀,  $\times$  ca 20.

bristles black; inferior fronto-orbital bristles two pairs, rather short, superior ones only one and very weak; occipital row very weak; genal bristle wanting. Antennae strongly elongate and correct, about  $2\frac{1}{2}$  times as long as face, black, but the tip of 1st and 2nd joints yellowish brown; 1st joint about twice as long as wide, slightly thickened towards the apex; 2nd joint about  $1\frac{1}{2}$  times as long as the 1st joint, with an oblong, yellowish elevation on the inner side of the tip, the apical half distinctly thickened and distinctly black haired, the middle bristle distinct but not very long; 3rd joint about 3 times as long as the 2nd, very slightly narrowed toward the rounded tip; arista short, distinctly shorter than the 3rd joint, shortly plumose, yellowish brown. Palpi very small, brown, pointed at the tip; proboscis narrow, yellowish.

Thorax about twice as long as wide, moderately widened behind, black, distinctly covered with a greyish tomentum, on the praesutural portion there is one pair of indistinctly tomentose longitudinal stripes, which are extending to the middle of the postsutural portion and are rather widely separated from each other, two very fine indistinctly tomentose submedian stripes on the post-sutural portion to be seen only from behind; humeral callus long, when seen from dorsum about twice as long as wide, yellowish but with a round spot of dark castaneous colour in the middle. Pleura shining black, with a narrow, long, light yellow mesopleural spot which is not situated along the posterior margin of the mesopleuron but a little in front of that; area below the humeral callus yellowish brown; mesophragma shining black. Scutellum rather

small, nearly triangular, with the end moderately pointed, shining black, except for the margin and also for the under side yellow. All the bristles black; dorso-central, praescutellar and anterior supra-alar bristles wanting; scapular, anterior notopleural, and the hind one of the posterior supra-alar bristles very weak and very short, rather inconspicuous; scutellar bristles only one pair of apical ones, very thick but not very long, slightly divergent.

Abdomen slender, more or less petiolate, about as long as head and thorax together, somewhat spindle-shaped, black, moderately shining, covered with a pale pubescence; 1st tergite shortest, the second longest, the 6th conspicuously developed and about as long as the 5th; sternites comparatively large with reddish posterior margin; basal joint of ovipositor spindle-shaped, gradually narrowed toward the tip, strongly shining black, about as long as the 5th and 6th tergites together.

Wings comparatively narrow, hyaline but somewhat infuscated; stigma black; a very narrow blackish brown costal band from the tip of stigma to the tip of m; a distinct blackish brown cross-band from the tip of  $R_1$  to the tip of cu, its inner margin being straight and the outer margin conspicuously and somewhat triangularly notched in the anterior half; base of  $R_1$  with a very small brown spot; h and r-m very inconspicuously and very narrowly infuscated.

Legs long, reddish yellow; posterior coxae, trochanters and tibiae blackish, tarsi and anterior coxae and trochanters paler; posterior femora with an indistinct blackish spot on the apical dorsum; femora with two rows of rather short but thick black spines beneath, but anterior femora with only one row of 4 or 5 spines; two black spurs of the middle tibiae rather distinct, though one is only about half as long as the other.

Length: Body (with ovipositor) 10-10.5 mm (♀); wings 7.5-8 mm (♀).

Only two females from Formosa (Arisan, X). Types preserved in the Entomological Museum of the Government Research Institute, Taihoku, Formosa.



III. Genus **ADRAMA**, WALKER.

Proc. Linn. Soc. III., p. 118 (1858).

Genotype :—*Adrama selecta*, WALKER.

This genus is easily distinguished from the preceding by the short pendant antennae as in *Dacus*, the strong anterior supra-alar and basal scutellar bristles, the well-bristled  $r_{4+5}$ , and the absence of an antennal prominence.

The seven species described from the world are easily distinguished as follows :

1. Thorax without a yellowish median stripe.
2. Face with a pair of black spots; wings with dark cross-bands; posterior femora spinulose beneath.
3. Thorax on the posterior half of the disk uniformly reddish yellow.....  
.....*selecta*, WALKER.
33. Thorax on the posterior half of the disk with two broad black stripes....  
.....*spinata*, ENDERLEIN.
22. Face without spots; wings without cross-bands, but with a costal band; posterior femora non-spinulose beneath. ....*conscr*, WALKER.
11. Thorax black, with a yellowish median stripe.
2. Vertical calli never blackish; back of the head ochraceous; abdomen reddish brown with the base blackish.
3. Face with a black transverse band. ....*determinata*, WALKER.
33. Face with a pair of black spots. ....*ceramensis*, DE MEIJERE.
22. Vertical calli distinctly blackish; back of the head partly black; abdomen reddish brown, with the base blackish.
3. 4th and 5th tergites never black; hind femora without blackish spot.....  
.....*austeni*, HENDEL.
33. 4th and 5th tergites distinctly black; hind femora with a longitudinal blackish spot on the inner side.....*apicalis*, sp. nov.

3. *Adrama apicalis*, sp. nov.

(Fig. 15; Pl. I, fig. 2)

A blackish, slender species, distinguished by the wing-pattern, a very large blackish brown apical spot, light yellow stigma and a well-defined blackish submedian band which extends from the costa to M.

♀. Head spherical, about as wide as the thorax. Frons narrower than  $\frac{1}{4}$  of the head, without antennal prominence, slightly widened below, yellow with a very large oval black median spot on the lower half; lunula very small, light yellow; vertex shining black, this colour extending to the base of the superior fronto-orbital bristles except in the broad middle part. Face rather long, moderately broadened below, light waxy yellow, with a very large subquadrate black spot along the upper mouth-edge which is moderately reflexed; antennal grooves moderate in width; eye-margins narrow. Back of the head shining black, except a rather narrow margin and also the lower half which are yellow; cheeks rather broad, but shortly produced below, uniformly yellow.

All the bristles black, the two inferior fronto-orbital bristles rather short and widely apart from the superior one, which is rather conspicuous; vertical ones distinct, their inner pair very strong; occipital row weak; no ocellar bristles. Antennae short, about as long as face, yellow, with the apical joint brown; 1st joint very short, about  $\frac{1}{2}$  as long as wide; 2nd joint also very short, subtriangular in profile, a little longer than wide or about 4 times as long as the basal one, the middle bristle rather distinct and black; third joint about 3 times as long as wide or about  $2\frac{1}{2}$  times as long as the 2nd joint, gradually narrowed toward the round tip and very slightly curved upwards; arista longer than the antennae, distinctly but shortly plumose, blackish brown, with the thickened base yellow. Palpi light yellow, rather large, moderately curved upwards, with the tip rounded, sparsely furnished with rather distinct but short black bristles; proboscis yellowish.



Fig. 17.

*Adrama apicalis*, sp. nov. ♀,  $\times$  ca 20.

Thorax about twice as long as wide, moderately broadened behind, black, somewhat obscured by a short yellowish brown pubescence, with 3 yellowish brown longitudinal stripes, of which the middle one is very narrow, extending from a little behind the anterior margin of the disc to before its posterior margin, while the lateral pair is rather broad, and extends from the suture to just before the junction with the scutellum, nearly touching the upper base of the wing, and strongly curved; humeral callus bright yellow, with the anterior third black, when seen from dorsum about  $\frac{1}{3}$  as long as wide. Pleura black, with 4 large bright-yellow spots, a longitudinal triangular one along the upper margin of mesopleuron, a rather narrow transversal one along the posterior margin of mesopleuron united with the longitudinal one just mentioned, the largest one on the sterno-pleuron united with the yellow colour of the posterior coxae, and the remaining one on the hypopleuron not doubled as in other genera; below the humeral callus there is a narrow transversal stripe, and at just below the wing base also a rather large spot, both being reddish brown; mesophragma shining black. Scutellum orange-yellow, but the dorsal surface black, not shining, subtriangular, a little shorter than wide. All the bristles black, strong and long, only the scapular bristles very weak; 4 scutellar bristles the same in length, about  $1\frac{1}{2}$  times as long as scutellum, the apical pair strongly divergent.

Abdomen much narrower than the thorax, both the base and the anal end moderately narrowed, about as long as head and thorax together, reddish brown, somewhat purplish, with the 4th and 5th tergites black, covered with a rather long pale pubescence; 1st tergite with a pair of large longitudinal black spots; 2nd tergite longest; 6th shortest, about  $\frac{2}{3}$  as long as 5th, somewhat yellowish; ventral side orange-yellow, with all the sternites black, and with a black pubescence; ovipositor long, light reddish brown, the basal joint being elongated conical and about as long as the 3 preceding abdominal tergites together.

Wings in morphology about the same as in *Merac. arisana*,  $R_1$  strongly narrowed at the apical half, and the blackish brown apical

cross-band conspicuously widened toward the wing-tip, so that there is a large apical spot; on r-m there is also a distinct blackish brown sub-median cross-band, which straightly extends upwards to the costa;  $r_1$  and  $r_{4+5}$  distinctly bristled.

Legs yellowish brown; anterior tarsi and tibiae, and posterior trochanters and tibiae blackish; posterior femora with a rather indistinct blackish brown basal spot and median longitudinal streak on the outer and interior sides; middle femora distinctly thickened and longer than other femora; the spines of femora very few, on the front femora only one, on the hind femora only three or four; spur of the middle tibiae very long and black, very conspicuously developed.

Length: Body (with ovipositor) 10 mm (♀); wings 8.5 mm (♀).

Only one female from Formosa (Koshun IV).

Type in the Entomological Museum of the Government Research Institute, Taihoku, Formosa.

## VI. Genus *NITOBEDIA*, nov.

Very near to the genus *Adrama*, but at once distinguished by the bare arista, by the short thorax, by the spinulose anterior femora, and by the straight cu-an; in the shape of body allied to *Euphranta* LOEW, but easily distinguished by the reduced chaetotaxy.

Genotype—*Nitobedia formosana*, sp. nov.

Head rather spherical, broader than thorax, a little shorter than wide or a little broader than high; frons about as wide as eye, slightly broadened forwards; lunula distinct; vertex not keeled, with broad vertical calli; face about as long as wide, moderately convex, with rather broad antennal grooves which are reaching the mouth-edge and are nearly the same in width throughout the whole length, in profile straight and shorter than the frons; eye-margins rather broad; back of the head rather conspicuously swollen; cheeks large, without genal groove; vibrissal edge not bristly. Eyes rather rounded, comparatively small, with the posterior margin moderately convex at the upper half, the anterior margin strongly convex, the upper angle rounded and the lower angle more or less pointed. Antennae inserted below the middle

of eye, rather long, nearly reaching the upper mouth-edge; 3rd joint about twice as long as 2nd joint or about as long as  $2\frac{1}{2}$  times the width, rounded at the tip; arista not pubescent. Palpi moderate in size, slightly curved upwards, rounded at the tip, not distinctly bristled.

Mesonotum narrow, distinctly  $1\frac{1}{2}$  times as long as wide, nearly parallel-sided but at the anterior third distinctly narrowed towards the anterior margin; scutellum rather small, subtriangular, flattened above.

Abdomen rather narrow, distinctly longer than thorax; 5th tergite of male as long as the 4th, not bristly at the tip; two basal fused tergites as long as the following two together; hypopygium rather large, but genitalia small.

Wings narrow, without costal spine; stigma small, about  $\frac{1}{3}$  as long as the second costal cell, distinctly pointed; anal cell large, about twice as wide as  $M_1$  but shorter, with the apical margin straight; posterior angle of  $1M_2$  right-angled, reaching just above the wing margin; veins nearly straight, m being slightly curved; r-m distinctly after the middle of  $1M_2$ , but not nearer to m-cu;  $r_{4+5}$  bristly on the basal portion of upper side and on the base of under side.

Legs slender; front femora spinulose on the under side; middle tibiae with a long apical spur; hind tibiae without row of bristles.

Chaetotaxy reduced: Fronto-orbital bristles very weak 2:3; ocellar, postvertical and genal bristles wanting; vertical bristles 2, the inner pair being very strong and twice as long as the outer pair; bristles of occipital row very weak, but rather numerous; praesutural, dorso-central, pteropleural, sternopleural and propleural bristles wanting; mesopleural bristle 1, rather weak; notopleural 2; supra-alar 3 (1 anterior, 2 posterior); scutellar bristles 4; all the bristles black.

Only one species found in Formosa.

#### 4. *Nitobeia formosana*, sp. nov.

(Pl. IX, fig. 5)

♂. A yellowish brown species of small-sized, with peculiar wing-pattern. Frons brown, with the sides orange-yellow, covered with a very sparse blackish pubescence; lunula whitish yellow; vertex with an

irregular blackish ocellar dot, and with waxy greyish yellow vertical calli; face reddish yellow, somewhat darkened beneath, with the eye-margins orange-yellow; back of the head reddish brown, covered with numerous depressed black pubescence, with the orange-yellow eye-margin which is gradually broadened below; cheeks orange-yellow, with a large triangular brown spot just below the lower angle of eye, covered with a few depressed black pubescence behind. Antennae reddish yellow, with the basal joint yellow; arista black, with the basal third yellowish; second joint without distinct median seta. Palpi yellowish brown; proboscis brown.

Mesonotum reddish brown or brown, blackish pubescent, with the humeral, notopleural and supra-alar callosities waxy light yellow; pleura shining dark castaneous, with two broad transverse bands, one being in the front border and other in the middle; scutellum yellow; postscutellum shining, dark castaneous.

Abdomen shining, dark castaneous, blackish pubescent; genitalia and hypopygium castaneous.

Wings hyaline, with two large brown spots and one narrow similarly coloured band; median spot, from the stigma to the middle of  $1M_2$  along the inner margin of  $r-m$ , elliptical but pointed posteriorly; apical spot very much larger than the median one, its interior margin being convex and extending from the middle of  $R_1$  to the middle of  $IIM_2$ , passing a little after the base of  $m-cu$ ; a narrow band, obliquely passing over  $m-cu$ , S-like shaped and united with the apical patch in  $R_1$ . Halteres brown, with the base yellow; squamulae greyish white.

Length: Body 6-7 mm.; wings 6.5-7.5 mm.

Hab. Formosa—Arisan (X), collected by the late I. NITOE.

Type in the Entomological Museum of Government Research Institute, Taihoku, Formosa.

## V. Genus *PSEUDOPELMATOPS*, nov.

Very closely allied to the genus *Pelmatops*, ENDERLEIN, but easily distinguished by the chaetotaxy, the very long and slender palpi which are thickly bristled, the long third joint of the antenna, the comparative

shortness of two fused basal tergites, and the very long and more or less pointed wings.

Head about as wide as thorax, with a peculiar very long, cylindrical, distinctly pubescent lateral process, which is slightly narrowed in the middle, and is about as long as thorax; frons about as broad as long, parallel-sided, very slightly oblique forwards, with a broad and shallow longitudinal furrow; lunula linear, but between the bases of the antennae nearly triangular; vertex slightly convex, with a high but small ocellar triangle; face about twice as broad as long, strongly oblique hindwards, so that it forms an angle of about  $60^\circ$  with the frons at the antennal base, moderately concave above the upper mouth-edge; antennal grooves rather broad, extending to the mouth-edge; back of the head strongly swollen and strongly produced behind, but its upper half nearly horizontal and concave, the lower half perpendicular, with a very conspicuous occipital tubercle; cheeks very large but not very strongly produced below, rather horizontal; genal groove narrow and short, only just visible in anterior beneath the base of the lateral process, the upper tip distinctly edged and extending a little above the base of the lateral process. Eyes placed on the distal end of the lateral processes, very strongly convex, more or less pointed, nearly conical. Antennae distinctly longer than face, moderately drooping, their bases distinctly apart from each other; 3rd joint long and slender, about 4 times as long as wide, the tip narrowly rounded; arista plumose; middle bristle of second joint distinct. Palpi very long, linear, longer than antennae, very slightly S-like curved, rounded at the tip, furnished with numerous short but rather strong bristles nearly all over the surface; proboscis also long.

Thorax about  $1\frac{1}{2}$  times as long as wide, distinctly narrowed forwards, strongly convex; scutellum medium-sized, subtriangular and rather strongly convex above; metanotum very large, strongly convex.

Abdomen very slender, slightly widened behind; the two basal tergites cylindrical, about as long as the 3rd and 4th tergites together; 5th a little longer than the 4th, furnished with a few bristles on the

posterior margin; hypopygium moderate in size, genitalia with oval appendages.

Wings narrow and rather long, more or less pointed at the apex, with very short marginal spines; stigma narrow and long, pointed, about as long as the apical portion of the costal cell; 1st posterior cell ( $R_s$ ) very long, moderately widened in the middle and very slightly narrowed on the outer margin; discoidal cell (1st  $M_1$ ) also very long, moderately widened towards the apical margin; anal cell drawn out into a very short pointed lower angle, about as long as the 2nd basal cell ( $M$ );  $r_{4+5}$  slightly curved, not entirely bristled;  $r-m$  very slightly oblique and curved inwards, distinctly beyond the middle of the cell 1st  $M_2$ ; posterior cross-vein slightly oblique, nearly parallel with  $r-m$ , very slightly curved inwards; squamulae very small.

Legs very slender and long, without bristles or spines on the femora and tibiae, except apical ones; the apical spur of the middle tibiae moderately long.

Chaetotaxy rather strong, but represented by only the followings: fronto-orbital 1:1, vertical 1 (inner), genal 1, scapular 1, notopleural 1, supra-alar 1:1, and scutellar 2 (apical).

Genotype: *Pseudopelmatops nigricostalis*, m.

##### 5. *Pseudopelmatops nigricostalis*, sp. nov.

(Fig. 16; Pl. I, fig. 3)

♂. A rather large species of shining black colour. Frons very indistinctly pubescent, in the middle with a very narrow reddish longitudinal stripe; lunula yellowish; face dark sepia, with a narrow ill-defined greyish yellow transverse band at just above the upper mouth-edge, this band extending to the base of the lateral processes, where it is markedly widened; epistoma greyish yellow; a conspicuous knob just above the occipital foramen castaneous; apex of lateral processes very narrowly margined with a yellowish colour which is narrowly extending towards the base through their apical fourth along the lower margin; tip of the eyes yellowish brown; pubescence of lateral processes black. Thorax shining black, with two greyish tomentose longitudinal stripes,



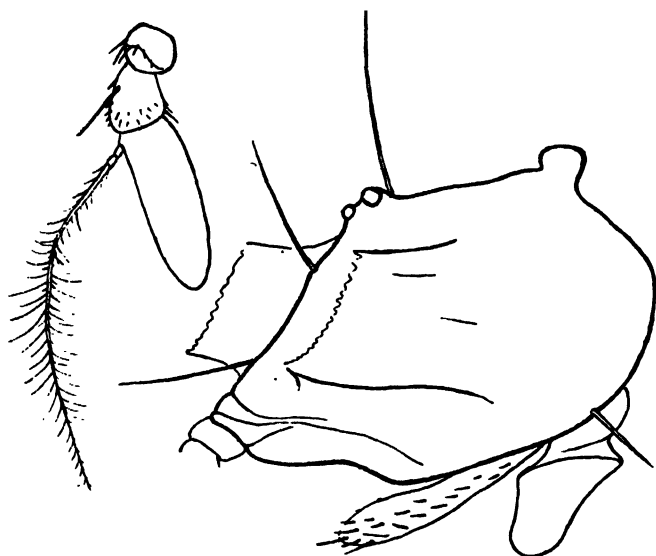


Fig. 16.

*Pseudopelmatops nigricostalis*, sp. nov.  $\times$  ca 20.

the latter not reaching the posterior margin; humeral calli dark castaneous; wing-bases more or less reddish. Abdomen on the ventre more or less castaneous, black pubescent. Antennae sepia-coloured; palpi yellow, but obscured by numerous black bristles; proboscis reddish yellow, with a blackish brown pubescence. Wings more or less yellowish brown, with a broad sepia-coloured costal band which by its apical third extends beyond  $r_{4+5}$ ; stigma reddish; basal portion of costal cell (1st C) distinctly hyaline; squamulae brownish; halteres light yellow. Legs black; the tibiae and tarsi reddish brown. All the bristles black.

Length: Body 12 mm; wings 11.5 mm.

Only two males from Formosa (Arisan VII, X).

Types in the Entomological Museum of the Government Research Institute, Taihoku, Formosa.

## VI. Genus *CHAETODACUS*, BEZZI.

Memoirs of the Indian Museum, III, p. 93 (1913).

-Genotype—*Musca ferruginea*, FABRICIUS.

Thorax-suture wanting in the middle; praescutellar, scapular and anterior supra-alar bristles developed. Femora not bristled beneath. Scutellum with two apical bristles. Wings without cross-band; in the male with a well-developed supernumerary lobe, and also with more or less conspicuous but rather short black shaggy hairs along front border of apical portion of the anal vein near the pointed lower outer angle of the anal cell. Abdomen oval, the 3rd tergite of the male with a ciliation of some bristle-like hairs.

In the Japanese Empire there have been found 10 species so far, which may be distinguished as follows:

#### Key to the species,

1. Hind cross-vein (m) not bordered with brown.
2. Second tergite yellowish, with a more or less distinct black band.
3. Thorax without yellow median stripe behind the suture.
4. Brown costal band narrow, not extending along  $r_{4+5}$ .
5. Frons rather narrow, parallel-sided, about  $\frac{1}{4}$  as broad as the head.
6. Costal band distinctly brown, without separated apical spot; scutellum without apical blackish spot.
7. Small species. Third, and nearly entire surface of 4th abdominal sternite blackish; femora with more or less conspicuous brown apical ring.
8. Third antennal joint about 4 times as long as wide.  
..... *parvulus*, HENDEL.
88. Third antennal joint about 3 times as long as wide.  
..... *antennalis*, sp. nov.
77. Middle-sized species. Fore-margin of the 3rd abdominal sternite black; femora entirely yellowish, never with dark ring ..... *ferrugineus*, FABRICIUS.
66. Costal band very narrow and pale brown, with a separated apical spot; scutellum blackish brown at the apex .....  
..... *hyalinus*, sp. nov.
55. Frons rather broad, slightly widened forwards, distinctly broader than  $\frac{1}{4}$  of head-width; brown costal band conspicuously broadened at the wing-tip as an apical spot; hind tibiae almost always yellowish ..... *latifrons*, HENDEL.
44. Brown costal band broad, extending along  $r_{4+5}$ , without distinct apical

- spot; frons narrow, parallel-sided, about  $\frac{1}{2}$  as wide as the head; femora yellowish, without dark ring.....*costalis*, sp. nov.
33. Thorax with a distinct yellow median stripe; frons parallel-sided, about  $\frac{1}{2}$  as broad as head; face with a black curved band; brown costal band rather narrow, but more or less widened towards the tip of the wing; femora with a broad blackish ring.....*diaphorus*, HENDEL.
22. Abdomen entirely black; thorax without yellow median stripe; costal band very narrow, blackish, not connected with the distinct isolated blackish apical spot; frons parallel-sided, about  $\frac{1}{2}$  as wide as the head; face with two black or brownish spots or very rarely one band; ventre of abdomen with a black central spot on each sternite; femora with a very broad black ring .....  
.....*cilifer*, HENDEL.
11. Hind cross-vein (m) margined with brown; brown costal band rather narrow, with a nearly isolated rather large brown apical spot.
2. Yellowish brown species. m and anal vein entirely rather broadly infuscated; frons rather narrow, about  $\frac{1}{2}$  as wide as the head, parallel-sided; 1st and 2nd tergites almost entirely pale yellowish red or brown, without black band, the 3rd tergite with a narrow black basal band; femora with an incomplete brownish ring.....*cucurbitae*, COQUILLET.
22. Blackish species. m near the wing-margin and anal vein very narrowly infuscated; frons rather broad, somewhat widened forwards, less than  $\frac{1}{2}$  of head-width; 1st, 2nd and 3rd tergites black, with a rather broad yellowish hind margin; femora with a conspicuous black or blackish apical ring which is interrupted on the under side, sometimes on the upper side especially on the front pair. ....*tappanus*, sp. nov.

## 6. *Chaetodacus parvulus*, HENDEL.

Suppl. Ent. I, pp. 21-22 (1912).

A blackish or blackish-brown, very small species: Distinguished by the colour of the abdomen and legs, the relatively broad (but not wider than the eye) and nearly parallel-sided frons, the ciliation composed of comparatively long bristles on the 3rd tergite of the male, and the blackish costal band which is distinctly constricted before the tip of wing.

♂ ♀. Frons pale yellowish brown to dirty yellow with three pairs of small round or often rather large obliquely elongated blackish or brownish lateral spots, and one larger elongated middle spot of the same coloured, the latter very often extends with a fine brown or blackish line to the black ocellar triangle or sometimes becomes a narrow trans-

versal spot, or it may be, though rarely absent, in the latter case the lateral spots being very inconspicuous or rarely wanting. Face light waxy yellow, with two characteristic very large oblong black or blackish brown spots, one in each of the antennal furrows, in the middle with a dark fine longitudinal stripe; eye-margins comparatively broad, somewhat greyish tomentose. Cheeks comparatively broad and of the same colour as the face, below the lower angle of the eye there is an inconspicuous brownish spot. Back of the head shining, brownish or blackish, except the moderately broad pale yellowish margin; between the upper angles of the eyes there is also a brownish or blackish rather narrow transversal line above the ocellar triangle. Antennae rather large, light yellowish brown or light reddish brown; 2nd joint paler, about half the length of the 3rd joint, with fine median seta at the middle of the dorsal margin; 3rd joint darker than the preceding ones, especially at the tip, where it is very often blackish, very slightly narrowed towards the rounded tip; arista blackish with the basal portion paler, about as long as the 2nd and 3rd joints of the antennae together. Palpi distinctly curved upwards, light yellowish brown or dirty yellow. Bristles light yellowish brown with blackish tip, except the fronto-orbital ones which are entirely blackish or brownish; occipital row of bristles wanting.

Thorax blackish, with moderate greyish tomentum and shining light yellow pubescence, with three dark longitudinal stripes, of which the middle one is narrower than the others and becomes very indistinct behind the suture and broadened hindwards, while the lateral pair is conspicuous through nearly its entire length, though interrupted at the suture and becoming very narrow hindwards; lateral stripe behind the suture very narrow but well-defined, light yellow; humeral and notopleural calli light yellow; pleurae and mesophragma uniformly black or blackish castaneous brown (in the Type, however, the prothorax is paler, and the yellowish spots are the same as in *dorsalis*, HENDEL); scutellum light yellowish, the hind margin between the bristles straight, never rounded, the bristles being yellowish with the apical half blackish and very long, much longer than the scutellum; bristles on the thorax rather strong and brownish black.

Abdomen blackish castaneous brown or black, except that the narrow hindmargin of the 1st tergite and the hind half of the 2nd are yellowish, the 5th tergite very often yellowish brown, with the basal portion and also with a median stripe blackish or dark castaneous brown, and that sometimes the 4th is paler at the hind margin; ciliation of bristles on the 3rd tergite of the male longer than half the segment, blackish; sternites light reddish yellow to dark brown, darker towards the anal end; ovipositor moderately depressed, of medium length, with brown basal segment, which is shorter than the 5th tergite.

Wings hyaline with all the veins brown and with a characteristic brown costal band which is distinctly narrowed at the tip of the marginal cell ( $R_1$ ) and moderately widened at the wing-tip, being much darker on the stigma; anal stripe in the male rather broad; stripes on the wings varying from pale yellow to brown.

Legs light yellow, except the hind tibiae, the 4 apical joints of the tarsi, coxae and trochanters brown to dark brown; femora with a rather broad brown to blackish brown ring near the tip; front tibiae very often light brownish; on the tip of the middle tibiae there is a long blackish brown spur and on the tip of the front tibiae a shorter one; pubescence nearly entirely pale yellowish.

Length: Body 4–5 mm (♂ ♀), wings 3.5–4.1 mm (♂ ♀).

The types of this species preserved in the Entomological Institute of the Kaiser-Wilhelm Gesellschaft, Berlin-Dahlem, are rather paler specimens.

Hab. Formosa—Kanshirei (IV), Takao (V, VIII), Tainan (III), Heito (IV), Arisan (X), Riran (VI).

Host. Unknown.

### 7. *Chaetodacus antennalis*, sp. nov.

(Fig. 17; Pl. I, fig. 4)

A rather small, blackish species, distinguished by the short and broad 3rd antennal joint, and by the rather broad, parallel-sided frons.

♂ ♀. Frons reddish brown, but the eye-margins yellowish with three pairs of darker but indistinct lateral spots, of which the lower pair is rather more conspicuous; lunula blackish brown; ocellar triangle

black. Face shining, yellowish brown to light reddish brown, with an indistinct very narrow middle stripe and also one pair of very large, round or oval, black lateral spots; eye-margins rather narrow, light brownish and slightly dusted with a greyish tomentum. Cheek medium in width, orange-yellowish, with an ill-defined rather large brown spot below the lower angle of the eye. Back of the head reddish brown or blackish brown, with a broad orange-yellow margin; vertex transversely carinated just behind the ocellar triangle. Bristles light-yellow, with blackish tips, except the fronto-orbital ones which are uniformly blackish brown; occipital row wanting.

Antennae comparatively broad and short, dirty yellow with the 3rd joint dark brown, the latter is about three times as long as broad and gradually narrowed towards the nearly pointed tip, in the male somewhat narrower than in the female; 1st joint longer than broad and about  $\frac{2}{3}$  as long as the following, broadened apically; 2nd joint gradually broadened towards the tip, about twice as long as wide and about  $\frac{2}{3}$  as long as the apical joint, with a long middle hair on the dorsal margin; arista blackish, pale at the base, rather short and distinctly shorter than the 3rd and 2nd antennal joints together. Palpi light yellowish, rather small, distinctly curved upwards and somewhat sinuated just below the narrowly rounded tip; proboscis dark brown.

Thorax black, but the side above the base of the wings reddish brown, greyish tomentose and yellowish pubescent; on the disc there are three fine dark longitudinal stripes and is also a very fine, in the middle widely interrupted, dark transversal band along the suture; of these stripes the middle one is not developed behind the suture and the

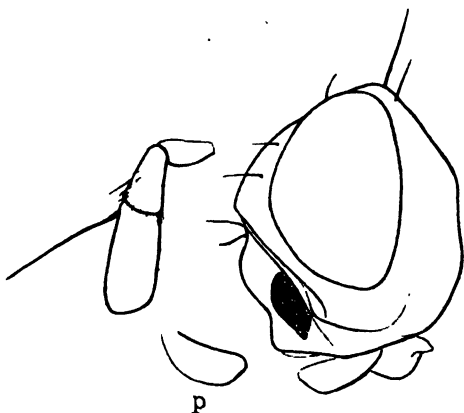


Fig. 17.

*Chaetodacus antennalis*, sp. nov.  $\times$  ca 20.  
p, right palpus.

lateral pair is interrupted at the suture; the yellowish lateral stripe very fine and distinct as in *parvulus*; humeral and notopleural calli whitish yellow or light reddish yellow; pleurae and mesophragma as in *parvulus*, but the prothorax is almost always brownish. Scutellum similar to *parvulus*.

Abdomen castaneous brown to reddish yellow, except for the basal third of the 1st tergite, the basal half of the second, nearly the entire 3rd, and the lateral base of the 4th, which all are blackish or brownish, the fourth and fifth being a little darker in the middle; the shining portions of the fifth tergite brown to reddish brown; hind margin of each tergite almost always yellowish; the ciliation of bristles on the 3rd tergite of the male brown or blackish brown, longer than half the length of the segment; ovipositor rather broad, rather strongly depressed, castaneous brown with the basal joint blackish, the latter being shorter than the fifth tergite. Underside of abdomen brownish, darkened towards the anal end. Pubescence of the abdomen mostly whitish yellow.

Wings as in *parvulus*, but comparatively broad, the 1st posterior cell (R<sub>1</sub>) being distinctly broader than the discoidal cell (1st M<sub>2</sub>).

Legs pale yellowish, but an incomplete ring near the tip of the femosa, the apical portion of the hind tibiae and the 3 or 4 apical joints of the tarsi dark coloured.

Length: Body 5-5.5 mm (♂ ♀); wings 5.5-5.7 mm (♂ ♀).

This species is very closely allied to *parvulus*, HENDEL, but quite easily distinguished by the broad 3rd antennal joint and also by the comparatively broad wings.

I have reared this species from the fruits of *Solanum xanthocarpum*, SCH. et WEN. collected in Tainan.

## 8. *Chaetodacus ferrugineus*, FABRICIUS.

(Fig. 18)

Ent. Syst., IV., p. 342 (*Musca*) (1794).

*Dacus conformis*, DOLESCHALL, Nat. Tijdschr. v. Ned. India, XVII, p. 122 (1858-59).

A middle-sized species, ferruginous, with distinct yellow markings on the thorax and with hyaline wings, the latter brown on the fore border in the anal cell.

♂ ♀. Frons parallel-sided, about  $\frac{1}{4}$  as broad as the head, reddish yellow to reddish brown, sometimes with three pairs of indistinct dark spots from which arise the brown to blackish brown fronto-orbital bristles; lunula shining, chestnut-brown. Face waxy yellow, with two rather large round or oval black spots, each in the middle of the antennal furrows; eye-margins very slightly widened below, somewhat white tomentose; cheeks usual, waxy yellow, with a blackish brown not well defined spot just below the lower angle of the eye; epistoma waxy yellow; proboscis brown, with yellow palpi, which are rather large and straight with round tip. Back of the head yellow to reddish yellow, occipital row of weak by developed bristles present; ocellar triangle blackish. Antennae yellow to pale yellowish brown, with the third joint usually darker in colour, being dark reddish-brown to black, sometimes dark only at the tip; first joint shortest, rather strongly widened towards the tip, furnished with some very minute dark bristly hairs at the tip; 2nd joint about  $1\frac{1}{2}$  times as long as the basal joint, gradually widened apically, distinctly pubescent, with a rather long oblique blackish median seta; 3rd joint elongate, very slightly and very gradually narrowed towards the rounded tip, very often parallel-sided; arista blackish except for the yellow to pale yellow basal fifth, about as long as the 1st and 2nd antennal joints together. All the bristles brownish to blackish, except the vertical bristles which are yellow or pale brown.

Thorax brown to dark reddish-brown, entirely covered with a delicate silvery white tomentum and a fine yellow pubescence; on the disc there are three more or less indistinct longitudinal dark lines without silvery white tomentum, of which the middle one is restricted to the fore half, while the lateral pair is distinct nearly through the whole length of the disc, though interrupted on the suture; one pair of bright yellow longitudinal stripes just above the wing-base rather narrow and usually not reaching the hindmargin of the disc; humeral and notopleural calli bright yellow. Pleurae with conspicuous yellow spots as follows: One front spot reaching from the notopleural callus straight to the upper portion of the sternopleuron rather broad, one hind spot on the metapleuron; these yellow spots surrounded with dark coloration



especially on the meta- and sternopleurae. Scutellum entirely pale yellow to yellow, with two brown apical bristles, which are nearly parallel and nearly as long as the disc; mesophragma reddish brown, in the middle of its hind margin somewhat blackish, commencing from the dark middle stripe on the metapleuron.

Abdomen brown to dark brown, covered very inconspicuously with grey dust; the fore half of the third tergite and the side of the first to fourth tergites blackish; very often also the fore half or the middle third of the second tergite, and the entire fourth dark coloured; fifth tergite with a pair of large shining dark transversely elongate spots; on the middle of each the fourth and fifth tergites a narrow (often very fine) blackish longitudinal line, these two lines often connected with each other. Pubescence uniformly fine and shining yellow; bristle-ciliation of the third tergite of the male dark brown to black, the bristles of about half the length of the segment; ovipositor depressed, shining reddish yellow, with the basal joint slightly darkened and at least as long as the second abdominal tergite.

Wings hyaline, with the veins brown; stigma, marginal cell ( $R_1$ ), the apical margin of the submarginal cell ( $R_{4+5}$ ), upper half of the apical margin of the first posterior cell ( $R_5$ ), and about the whole anal cell blackish brown, thus forming the costal and anal stripes; the two are of the same width, and the costal stripe is not widened at the tip; axillary cell (2nd A) grey at the apical corner. In the male the black shaggy hairs along the anal vein are very fine and moderate in length, and the supernumerary lobe is moderate.

Legs pale yellow to yellow, but the hind tibiae blackish brown, often the base of the front and middle tibiae darkened; middle tibiae with one large blackish spur and another much smaller paler one.

Length: Body ♂ 6.5 mm -- ♀ 7.5 mm, wings ♂ 5.5 mm -- ♀ 6 mm.

This species as found in Formosa is not very variable in size nor in colouring, as shown in the above description; I have reared only four specimens from mangoes, which were collected at Taihorin (VI, VII) and Taipin (IX).

This is a widely distributed species, since we find records from

Ceylon, India, Java, China and Amboina, but it is very doubtful if the species has ever been exactly defined ; quite possibly there may be some varieties or other species included.

The specimens bred from oranges, mangoes and other fruits in Formosa belong mostly to the dark coloured variety (*dorsalis* HENDEL) of this species.

#### 9. *Chaetodacus ferrugineus* var. *dorsalis*, HENDEL.

. Fig. 18/

Suppl. Ent. I, p. 18, Pl. I, fig. 3 (1912'.

This variety very much resembles the darker coloured specimens of *ferrugineus*, from which it is distinguished as follows :

Frons always with three pairs of lateral spots and a rounded middle one ; vertex at the hind margin almost always distinctly but narrowly brown or blackish. Vertical bristles always brown to blackish. The 3rd antennal joint twice as long as the 2nd, the latter shorter than in *ferrugineus*, especially in the male.

Back of the head either brown to blackish with broad yellow margin, or yellow with whitish margin. Palpi broader and always curved upwards (not straight).

Thorax black, never brownish, distinctly whitish tomentose and pubescent ; the disc along the inner margin of the humeral callus, the suture, and the upper portion of the wing-base yellowish brown to brown, the pale coloration at the suture being very striking in the female ; mesophragma and metapleura (except the yellow spot) almost always shining blackish brown to black, the former being paler in the female. Scutellar bristles stronger, and longer than the disc. The first tergite almost always nearly entirely dark brown to black ; on the third, fourth and fifth tergites there is always a very conspicuous black median stripe which is never interrupted ; the blackish coloration much more extended. Tip of the axillary cell (2nd A) in the male rather distinctly blackish.

Types in the Entomological Institute of the Kaiser-Wilhelm Gesellschaft, Berlin-Dahlem.

In my collection there are also other specimens allied to *ferrugineus*, for which I will erect a new variety as follows :

10. *Chaetodacus ferrugineus* var. *okinawanus*, nov.

(Fig. 18; Pl. I, fig. 5)

Very closely allied to the preceding, but distinct in the form of the palpi and antennae, and also in the coloration of the body.

In coloration the head and thorax are similar to *dorsalis*, while the abdomen is as in *ferrugineus*. Palpi shorter than that in *ferrugineus*

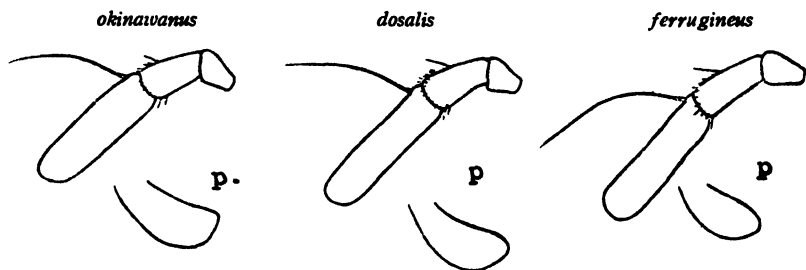


Fig. 18.

*Chaetodacus ferrugineus*, Fab. ♀ × ca 20. p, right palpi.

but longer than in *dorsalis*, nearly straight with the lower margin convex, especially in female is this very distinct. Third antennal joint twice as long as the second; the latter shorter than in *ferrugineus*.

Length: Body 6.5-7 mm (♂ ♀); wings 5.5-6 mm (♂ ♀).

This species was captured by the author on oranges at Nago, Katena, Mawashi and Nishibaru (Okinawa VII), and in Kumejima (at Gushikawa the larvae feed on peaches), and Ishigaki and Taketomi (Yayeyama VII).

Types in the Entomological Museum of the Government Research Institute, Taihoku, Formosa.

11. *Chaetodacus hyalinus*, sp. nov.

(Fig. 19; Pl. I, fig. 6)

A blackish, medium-sized species; it is closely allied to *ferrugineus*, but differs as follows :

♀. Vertical bristles black, in *ferrugineus* light reddish yellow or yellow; palpi comparatively narrower; third joint of the antennae about 4 times as long as broad, the tip narrowed; scutellum brown in the apical half; 5th tergite without shining spots; wings without costal band, the apical spot and anal stripe very narrow, stigma yellowish; legs paler than in *ferrugineus*; ovipositor as long as its basal width, in *ferrugineus* about  $1\frac{1}{2}$  as long as the latter.

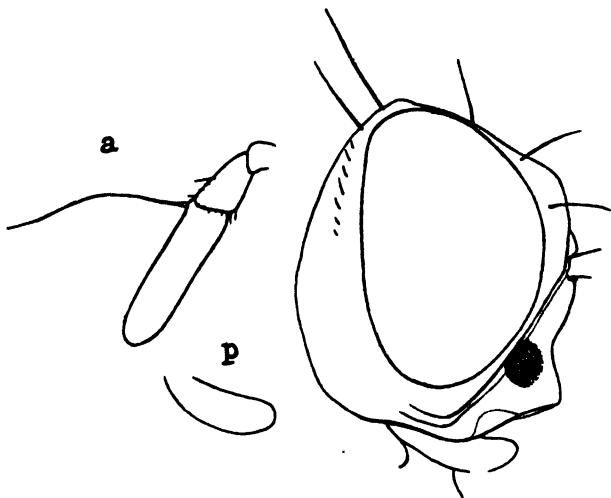


Fig. 19.

*Chaetodacus hyalinus*,  $\times$  ca 30. p, right palpus;  
a, right antenna.

Length: Body 7 mm ♀, wings 6.5 mm ♀.

Only one female captured by the author at Kagoshima (10, VII.).

Type in the Entomological Museum of the Government Research Institute, Taihoku, Formosa.

## 12. *Chaetodacus latifrons*, HENDEL.

Ann. Mus. Nat. Hung. XIII., p. 425 (1915).

A middle sized, brown to blackish brown species, distinguished by the broad forwards distinctly widened frons.

Frons broad, gradually widened towards the antennal base at where it is about as broad as the eye, yellow to reddish yellow, sometimes brownish, except the yellow rather narrow eye-margins; the lateral spots in 3 pairs, rather distinct, round, brown to blackish brown, of which the two lower pairs stand distinctly nearer each other than the

distance between the upper and middle one; the median spot rather large and round, placed between the two lower pairs of lateral spots or sometimes a little higher, a brown to blackish transversal stripe on the vertex over the black ocellar triangle; these spots and also the stripe often very indistinct; lunula brown to blackish. Face yellow, moderately shining, with one pair of black oval spots, each a little below the middle of the antennal furrow. Cheeks of medium breadth, yellow, this colour extending upwards along the margin of the dark coloured back of the head. Bristles light yellow with the tips blackish or brownish, except the fronto-orbital bristles which are blackish or brownish; occipital row wanting. Antennae rather slender, yellowish brown to reddish yellow, with the 3rd joint darker; 1st joint about  $1\frac{1}{2}$  times as long as its apical width, the base strongly constricted and light yellow; 2nd joint nearly twice as long as the basal joint, rather strongly widened apically, with comparatively short brown or blackish median seta in the middle of the dorsal margin; 3rd joint about as wide as the tip of the second, parallel-sided, the tip being somewhat narrowed and rounded, a little shorter than twice the length of the 2nd joint; arista brown or blackish, with the base light yellow or yellow. Palpi yellowish, moderate in size, slightly curved upwards but parallel-sided with the round tip; proboscis blackish brown to reddish brown.

Thorax blackish, very often the fore, hind and lateral margins reddish brown, with some greyish tomentum and conspicuously shining yellowish pubescence; on the disc there are three narrow black or dark longitudinal stripes, of which the middle one is very fine and not extending on the hind half of the disc, while the lateral pair is about twice as broad as the median one, and interrupted at the suture which is very often reddish brown; humeral and notopleural calli and the lateral stripe above the wing-base yellow to reddish yellow, the latter as a rule rather narrow, but sometimes of double the ordinary width. Pleurae moderately shining blackish, but the fore border between the front coxae and the humeral calli reddish brown, possessing conspicuous straw-coloured spots as follows: One large spot which covers all the posterior half of the mesopleuron and is in reality a continuation of the

elongated spot immediately in front of the suture; one small round spot on the upper end of the sternopleuron and one large spot on the meta-pleuron; as well as the space just below the latter spot, almost always reddish brown; mesophragma shining black; scutellum entirely pale yellow but often with a very fine brownish longitudinal stripe, the bristles about as long as the disc, but sometimes longer. All the bristles brownish, except the scutellar pair which is yellowish and has dark tips.

Abdomen reddish brown with the hindmargin of the 2nd and 5th tergites yellowish white; 1st and 3rd tergites and sometimes also the 4th dark brown or blackish with the exception of the hind margin; 2nd tergite very often with a rather broad dark brown or blackish band in the basal half; the 4th and 5th tergites each with a dark rather indistinct middle longitudinal stripe which, however, is often wanting. In some specimens the abdomen is nearly entirely reddish brown, or in some others has a distinct blackish band on the 2nd tergite although the rest of the abdomen is uniformly reddish yellow; the shining portion on the fifth tergite very extended but not striking as the lustre is rather mat; the ciliation of bristles of the male blackish brown or brown, the bristles rather short, conspicuously shorter than the length of the 3rd tergite; ovipositor rather short, depressed, with the basal joint shining black or shining dark castaneous brown. Ventral surface of abdomen orange-yellow to reddish yellow, darkened towards the anal end; in the middle of each sternite there is a round, rather large, dark spot, which is sometimes inconspicuous. Pubescence on the abdomen paler than that on the thorax.

Wings as in *parvulus*, but the brown costal band is distinctly widened at the tip so as to form a rather narrow apical spot, although it is also in some specimens of *parvulus* and *antennalis* distinctly widened at the wing-tip.

Legs light yellow to light brownish yellow, except for the coxae, the trochanter and the 4 apical joints of the tarsi which all are pale brown or brown; femora with a large, oval, dark brown spot on the underside of the tip, this spot often extending to the dorsal surface but never

forming a ring; hind tibiae sometimes brownish; the spur of the middle tibiae moderate in length and blackish brown, that of the front tibiae about half as long as the former; pubescence nearly entirely whitish.

Length: Body 6-7 mm (♂ ♀); wings 5-6 mm (♂ ♀).

Hab. Formosa—Tainan (III, IV, XI), Heito (IV, V), Kuraru (V), Pinan (V), Riran (V), Takao (XI), Suisharyo (X), Arisan (X).

Hosts - *Solanum incanum*, L.; *Solanum indicum*, L.

Types in the National Museum of Hungary, Budapest.

### 13. *Chaetodacus costalis*, sp. nov.

(Fig. 20; Pl. II, fig. 1)

A medium-sized brownish species, distinguished by the broad brown costal band of the wings, the uniformly yellowish femora, the rather pronounced slenderness of the 3rd antennal joint, the narrow parallel-sided frons, the distinct occipital row of bristles, and the strongly swollen back of the head.

Frons rather narrow, about  $\frac{1}{4}$  as wide as the head, parallel-sided, very rarely slightly broadened towards the antennal base; pale reddish brown except the eye-margins yellowish, almost always the lower half darker than the rest; the 3 pairs of lateral spots very small and brown, the middle one standing nearer to the lower spot than to the upper one, often very faint, in the middle there is also a very fine brown longitudinal line extending from the comparatively small black ocellar triangle to the dark and conspicuously elevated lower portion; lunula yellowish brown to dark reddish brown.

Face very pale yellowish brown, with one pair of rather small, subquadrate, black lateral spots, placed about the middle of each antennal furrow; eye-margins very narrow, distinctly furrowed and very slightly covered with a greyish tomentum; vertex with an inconspicuous brown transverse stripe over the ocellar triangle. Back of the head strongly convex, uniformly yellowish; cheeks comparatively short and rather broad, yellowish. All the bristles blackish brown, the occipital row be-

ing rather conspicuous. Antennae reddish yellow, with the apical joint dark coloured; 1st joint comparatively big, its tip about  $\frac{1}{2}$  as wide as its length; the second gradually widened apically, about  $1\frac{1}{2}$  times as

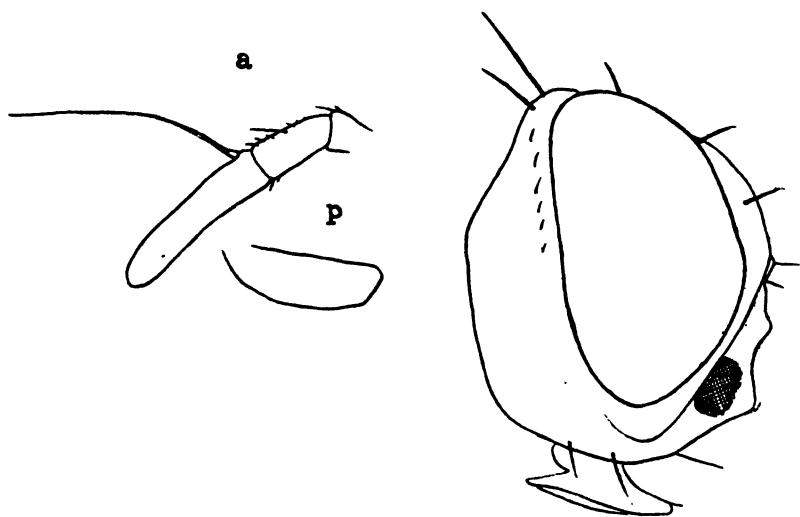


Fig. 20.

*Chaetodacus costalis*, ♂,  $\times$  ca 20. a, right antenna; p, right palpus.

long as the basal joint, a bristle-like hair in the middle of the dorsal margin rather striking; the 3rd about twice as long as the second joint, rather narrow, nearly parallel-sided, its tip somewhat pointed, or sometimes distinctly rounded; arista blackish except the basal third yellowish, about as long as the second and third joints together. Palpi moderate in length, straight, their tip somewhat truncate, in the female rather broad and its lower margin is distinctly convex; proboscis brown to blackish.

Thorax moderately covered with greyish dust and pale golden yellow pubescence, black, but on the lateral border, and along the suture and the interior margin of the humeral calli rather broadly reddish brown, on the disc there are also often 2 or 4 small very short same-coloured longitudinal spots in its anterior half; humeral and notopleural calli and the very broad lateral stripe above the wing-base yellowish-white to pale reddish yellow. Pleurae black, but the parts below the



humeral calli and also the wing-bases always reddish brown, with rather large yellowish spots, which are distributed in nearly the same way as in the preceding species; mesophragma blackish, its middle part reddish brown or blackish brown. Scutellum yellowish white to light reddish yellow, comparatively long, about half as long as broad, with rather rounded apical margin. All the bristles blackish brown to black; the scutellar bristles rarely brown, and about as long as the disc.

Abdomen reddish brown; 1st tergite brownish or blackish, sometimes yellowish; the 2nd very often with a rather narrow blackish transversal band in the anterior half, which band does not extend to the lateral margins and is almost always widened in the middle, or is sometimes interrupted into three pieces; the third with a rather broad black or blackish brown basal band, the latter being in the middle sinuated or interrupted, rarely with a narrow black longitudinal middle stripe which is extending to the distal end; the fourth always with a rather large though inconspicuous brown basal spot, but sometimes without such spot; the fifth with two large rounded brown spots, which are not conspicuously shining, or often inconspicuous; hind margin of each tergite more or less paler, especially on the second tergite striking; bristles of the 3rd tergite of the male blackish brown to black, not longer than half the length of the 3rd tergite; ovipositor rather small and strongly depressed, yellowish brown, its basal joint short and shorter than its basal width. Pubescence pale yellowish. Ventre pale yellow to pale reddish yellow, blackish towards the anal end, with a rather large rounded blackish or brown spot on each of the sternites.

Wings rather narrow, hyaline, with veins brown; stigma, marginal cell ( $R_1$ ) and submarginal cell ( $R_{4+5}$ ) brown to yellowish brown, composing a broad costal band which is extending a little beyond  $r_{4+5}$ , but not broadened at the wing-tip; anal stripe brown to yellowish brown, conspicuous, but narrower than the costal band; the shaggy black hairs along the apical portion of the anal vein of the male not conspicuous and very short; the axillary cell very slightly infuscated at the apical corner; the supernumerary lobe of the male very small; r-m oblique,

after the middle of the 1st  $M_2$ , rather long, a little longer than half of the apical portion of the fore margin of the 1st  $M_2$ .

Legs pale yellowish; hind tibiae and the 4 apical joints of the tarsi brownish; femora very slightly reddish at the tip; anterior two pairs of tibiae sometimes a little tinged with brownish.

Length: Body 7.5–8 mm (♂ ♀); wings 6.5–6.7 mm (♂ ♀).

Hab. Formosa—Karenko (VI), Pinan (VI), KAUDIN (V).

Hosts: *Bryonopsis laciniosa*, NAUDIN and *Solanum suratense* BURMANF.

Types in the Entomological Museum of the Government Research Institute, Taihoku, Formosa.

As regard the wing-pattern this species is very closely allied to the Indian *garcinia*, but easily distinguished by the chaetotaxy and other characters. It stands also rather near to *ferrugineus* var. *pedestris* BEZZI, but it is at once distinguished by the colour of the legs, the abdomen and the thorax, as well as by the longer third antennal joint.

#### 14. *Chaetodacus diaphorus*, HENDEL.

Ann. Mus. Nat. Hung. XIII., p. 425 (1915).

*Dacus* ♂, HENDEL, Suppl. Ent. No. 1, p. 23 (1912).

A medium-sized, blackish species, distinguished by the black transversal stripe on the face, the very long slender cylindrical ovipositor, the three conspicuous yellow stripes on the thorax, and the coloration of the legs and abdomen.

♂ ♀. Frons parallel-sided, distinctly narrower than the eye, light yellow to pale reddish yellow with 3 pairs of equidistant brown to blackish lateral spots, 2 or 3 bristles arising from the lower spot, and one rather large subquadrate brown or dark brown spot in the middle, the latter, however, is sometimes very faint; lunula very narrow and not very conspicuous, pale brown to pale castaneous brown; vertex with a distinct black transversal stripe, in which the comparatively small ocellar triangle is situated. Face somewhat paler than the frons, without any black lateral spots in the antennal furrow, but there is a striking, slightly curved, broad, black transversal band along the mouth-

edge ; eye-margins very narrow, somewhat silver-white tomentose. Back of the head moderately convex, brown to blackish brown, except the margin broadly yellowish, this colour extending below on the rather short cheeks, which possess an indistinct brown spot below the lower angle of the eye. All the bristles long and rather strong, black, only the genal bristles weak and yellowish. Antennae rather short, yellowish with the 3rd joint darker ; 1st joint short, about as long as wide ; 2nd joint short, about  $1\frac{1}{2}$  as long as the preceding or a little longer than wide, with rather short blackish median seta in the middle of the dorsal margin ; third joint distinctly longer than twice the length of the 2nd but rather broad, very slightly narrowed towards the tip which is rounded or somewhat triangular. Palpi light yellow, rather short and broad, very slightly curved upwards but the lower margin conspicuously convex in the apical third, with the tip rounded ; proboscis brown to blackish, except the tip light yellow.

Thorax black, but very rarely somewhat brownish, distinctly covered with a greyish tomentum and a pale yellow pubescence ; the middle stripe very narrow and not extending on the hind half, the lateral stripes also narrow and distinctly divided at the suture into two long triangular longitudinal spots, each pointing hindwards ; humeral and notopleural calli, two transversal spots in front of the suture and three narrow longitudinal post-sutural stripes yellowish white to light yellow, the middle stripe rather short and narrower than the lateral one, not reaching to hind margin of the disc. Pleurae and mesophragma black to blackish brown, sometimes the front portion of the pleuron reddish brown ; yellowish spots as in *latifrons*. Scutellum lemon-yellow to orange-yellow, with the hind margin distinctly rounded and with two long (longer than the scutellum) distinctly divergent apical bristles. All the bristles comparatively long and strong, black or blackish brown.

Abdomen black or brownish black, except the posterior two thirds of the 2nd tergite and also the middle of the hind margin of the first tergite yellow to reddish yellow, the anal tip being very often yellowish brown or reddish brown ; the ciliation of bristles of the male black, the bristles being about half the length of the 3rd tergite ; ovipositor very

long and slender, nearly cylindrical except the base of the basal joint, the latter is about as long as the 3rd, 4th and 5th abdominal tergites together and is with the exception of the yellowish base blackish brown. Ventral surface of abdomen light yellow to pale reddish yellow, almost always the sternites black or purplish black, but the 2nd yellowish. Pubescence on the abdomen paler than that on the thorax.

Wings hyaline, with nearly all the veins brown; stigma and marginal cell ( $R_1$ ) blackish, this colour extending to the middle of the first posterior cell ( $R_5$ ) along the costa and very slightly broadening on  $r_{4+5}$ ; anal stripe broad, in the male distinctly extending to the wing margin, but in the female shorter and narrower, in colour and also in width being nearly the same as in the costal band; apical corner of the axillary cell and tip of Cu very slightly smoked; supernumerary lobe of the male large, but the shaggy hairs not conspicuous.

Legs yellow; front femora (except their base), the apical third or half of the posterior two pairs of femora, and tibiae blackish brown to black, but in the female only the base of all the tibiae is brown or blackish brown; apical joint of the tarsi somewhat brownish; spur of the middle tibiae black, comparatively short.

Length: Body 6–7 mm ( $\delta$  ♀); wings 5.5–6 mm ( $\delta$  ♀).

Hab. Formosa—Shu-Shu (VII), Tompo (IX), Tappan (V), Tabani (III, V), Suisharyo (X); Kankau (VIII).

Type in the National Museum of Hungary, Budapest. *Dacus*  $\beta$ , HENDEL is the female of this species.

### 15. *Chaetodacus cilifer*, HENDEL.

Suppl. Ent. I., pp. 15–16, Pl. I, fig. 1 (1912).

A black, small species, distinguished by the black facial band, the narrow, but at the tip distinctly widened, brown costal band of the wing, the black femora (with exception of the base), the comparatively broad head, and the very long depressed yellowish brown ovipositor. Very near to *terminifer*, WALKER.

$\delta$  ♀. Frons rather broad, but distinctly narrower than the eye,

very slightly widened forwards, yellowish, except the broad middle part brownish, somewhat though distinctly obscured by a whitish tomentum, with 3 pairs of equidistant, rather large, brown lateral spots; lunula yellowish brown to pale reddish brown; vertex with a comparatively broad blackish transversal band over the comparatively large ocellar triangle. Face comparatively short and broad, conspicuously widened below, light yellow, with a broad black transversal band along the mouth-edge, this band being very rarely divided into two lateral spots; below the antennal base there is very often a round infuscated spot on the facial elevation; eye-margins medium in width, very slightly greyish tomentose. Back of the head black to brownish black, except the rather narrow margin orange-yellow to light yellow, this colour extending to the cheeks and very often distinctly broadened below; on the cheeks there is almost always a small brown spot just below the lower angle of the eye and, though very rarely, also an inconspicuous short pale brown transversal band. Antennae comparatively long, yellowish, their apical joint dark; 1st joint about as long as wide; 2nd joint distinctly widened towards the tip, a little longer than its apical width and about  $1\frac{1}{2}$  times as long as the 1st, with the median seta of medium length; 3rd joint about  $2\frac{1}{2}$  times as long as the preceding one, slightly narrowed towards the rounded tip; arista about as long as the three antennal joints together, blackish, with the basal fourth light yellow. Palpi light yellow, sometimes brownish on the lower margin, nearly straight, the tip being rounded and the lower margin being slightly, although distinctly convex; proboscis pale brown to dark brown, its apex lighter coloured. All the bristles long and black; there is no occipital row.

Thorax black, covered with a whitish pubescence, with two very inconspicuous grey-tomentose longitudinal stripes which are recognizable only in the praesutural portion; humeral and notopleural calli and narrow lateral stripes light lemon-yellow. Pleurae black, the spots being light lemon-yellow; mesophragma black. Scutellum light lemon-yellow, nearly triangular. All the bristles black; scutellar pair shorter than the disc.

Abdomen black, covered with a whitish pubescence, ventral surface

shining blackish brown to dark castaneous brown; bristles on the third tergite of the male about half its length; the shining spots on the 5th tergite inconspicuous and in the female conspicuously narrowed towards the sides; ovipositor long, depressed, brown to blackish, the basal joint about as long as the 3 preceding tergites together.

Wings hyaline; stigma blackish brown; costal band dark brown, extending to just before the middle of the apical margin of the first posterior cell ( $R_5$ ) and distinctly constricted in the upper half of the outer margin of the submarginal cell ( $R_4$ ); anal stripe blackish, broad at the base, not reaching the wing-margin; supernumerary lobe of the male rather small and the black shaggy hairs rather abundant and long.

Legs yellow, with the coxae, trochanters, front femora and the apical third or half of the posterior two pairs of femora, and hind tibiae black to brownish black; apical joints of tarsi almost always brownish, and the anterior two pairs of the tibiae sometimes very slightly tinged with light brown; spur of middle tibiae black, of medium length.

Length: Body (without ovipositor) 4–6.5 mm ( $\delta$  ♀); wings 3.5–6 mm ( $\delta$  ♀).

Hab. Formosa—Sokutsu (V), Tabani (III), Takao (VIII), Kagi (VIII), Tappan (VI), Niitaka (VII), Naihumpo (IX), Arisan (X), Arikan, Koshun (I–XI), Namakaban (IX).

Host — *Momordica cochinchinensis*, SPRENGEL.

Types in the Entomological Institute of Kaiser-Wilhelm Gesellschaft, Berlin-Dahlem.

#### 16. *Chaetodacus cucurbitae*, COQUILLET.

Ent. News, X., p. 129 (*Dacus*, (1899).

A medium-sized, yellowish brown or reddish brown species, distinguished by the large brown apical spot of the wings, the distinct brown transversal band at m, only one blackish band along the fore margin of the 3rd tergite, and absence of the occipital row of bristles.

Frons rather narrow, parallel-sided, distinctly narrower than, or very rarely about as wide as, the eye; light yellow to pale yellowish

brown, with 3 pairs of lateral spots and one large round or subquadrate spot in the middle pale brown to dark brown, almost always two fronto-orbital bristles standing on the lower lateral spot; lunula narrow, light brown to brown; ocellar triangle rather small and black. Face rather long, moderately widened below, light waxy yellow, with two rather small oval or oblong black spots; eye-margins rather narrow, distinctly elevated and silvery white tomentose. Back of the head moderately swollen, light brownish yellow, the margin being very light yellow but not well-defined; cheeks comparatively narrow and short, of the same colour as the margin of the back of the head, but somewhat brownish below the lower angle of the eye. All the bristles blackish brown to black. Antennae light yellow, somewhat brownish apically; 1st joint about as long as wide; 2nd joint about  $1\frac{1}{2}$  times as long as the basal joint; 3rd joint about  $2\frac{1}{2}$  times as long as the 2nd, gradually narrowed towards the rounded tip, but sometimes suddenly broadened at the base; arista about as long as the antenna, blackish with the base light yellow. Palpi rather narrow, nearly the same in width through the whole length and slightly curved upwards; proboscis dark brown.

Thorax yellowish brown to reddish brown, very rarely blackish brown, very slightly whitish tomentose; on the disc there are three narrow brown longitudinal stripes, of which the middle one is usually more distinct and somewhat darker, and the lateral ones are scarcely reaching the hind margin of the mesonotum but very often interrupted at the suture and usually very faint on the posterior half; humeral and notopleural calli and two transversal spots along the suture light yellow or yellowish white or sometimes dirty yellow; on the posterior half of the disc there are also three longitudinal stripes of the same colour of about equal width, of which the middle one is distinctly shorter than the others; they have rather broad border of brown colour, and this border of the middle one is connected with the middle stripe on the anterior half of the disc. Pleurae of the same coloration as the notum, and with the usual yellowish spots, the spot on the sternopleuron being comparatively large and distinctly transverse; mesophragma almost always light reddish brown, slightly darker at the sides; scutellum

light yellow to light brownish yellow, conspicuously rounded at the apex and with two long apical bristles; all the bristles brown to blackish brown.

Abdomen paler than the thorax, the two basal tergites more yellowish, especially the 2nd somewhat whitish on the posterior half; along the basal margin of the 3rd tergite there is a distinct but rather narrow blackish band, and on the 3rd, 4th and 5th tergites a narrow blackish longitudinal stripe which is very often interrupted at the sutures; the sides of the 3rd, 4th and 5th tergites blackish brown; the shining spots on the 5th rather distinct, in the female narrow and transverse-elliptical; ovipositor comparatively short, the basal joint a little longer than the 5th tergite, shining reddish yellow to reddish brown; ciliation of bristles on the 3rd tergite of the male blackish, rather conspicuous. Ventral surface of abdomen paler than the dorsum, the middle portion of the sternites blackish but on the 2nd distinctly paler than usual. Pubescence on thorax and abdomen light yellow, but on the latter much paler.

Wings very slightly brownish; stigma,  $R_1$  and  $R_5$  yellowish brown, but the latter becomes paler along the  $r_{4+5}$ ; a large round apical spot, a broad transversal spot at m and a rather broad anal stripe blackish brown, the second of which is very often extending nearly to the anal stripe along the wing margin; r-m sometimes bordered with brown; the shaggy black hairs of the male rather numerous but not very long; apical corner of axillary cell and the rather large supernumerary lobe in the male very often distinctly clouded.

Legs light yellow to reddish yellow, tip of the femora, hind tibiae and apical joints of tarsi slightly darkened, sometimes the anterior tibiae also very slightly darkened; spur of the middle tibiae black, of moderate length.

Length: Body (without ovipositor) 5-8 mm ( $\sigma$  ♀); wings 4-7 mm ( $\sigma$  ♀).

Hab. Japan - Yayeyama (I), Ibaruma (VI).

Formosa - All over the plains.

India; Ceylon; Burma; Siam; Malay Federated States; China; Philippines; Hawaii.



Hosts—*Bryonopsis laciniosa*, NAUD.; *Citrullus vulgaris*, SCHRAD.; *Cucumis Melo*, LINN.; *Cucumis sativus*, LINN.; *Cucurbita maxima*, DUCHESNE.; *Lagenaria leucantha*, RUSBY.; *Luffa cylindrica*, ROEM.; *Melothria heterophylla*, COGN.; *Trichosanthes cucumeroides*, MAXIM.; *Momordica charantia*, LINN.  
Type in the U. S. National Museum, Washington, D. C.

17. *Chaetodacus tappanus*, sp. nov.

(Fig. 21; Pl. II, fig. 2)

A blackish, medium-sized species, distinguished by the narrow blackish costal and anal stripes, the well-defined blackish apical spot, the small infuscated spot at the corner of the 1st  $M_2$ , the black scutellum with its longitudinal yellow stripes, the comparatively narrow head with a rather broad frons, and the occipital row of very sparse, weak, light yellow bristles.

♂. Frons rather broad, but narrower than the eye, slightly broadened forwards, dirty yellow, but the middle of the hind half brown,

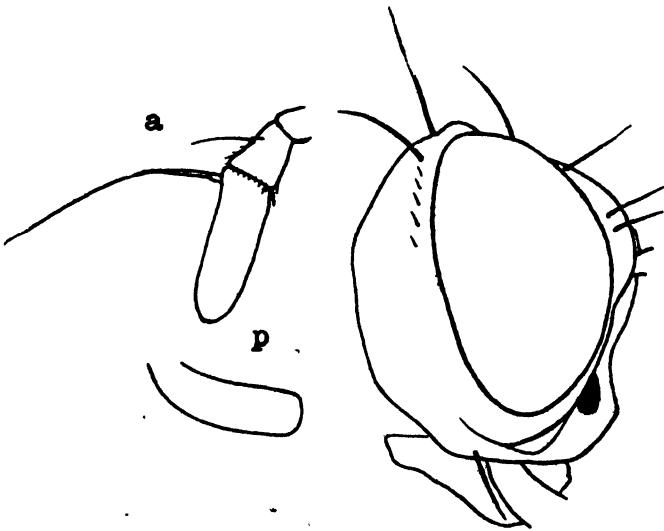


Fig. 21.

*Chaetodacus tappanus*, ♂,  $\times$  ca 20. a, right antenna; p, right palpus.

with 3 pairs of rather distinct equidistant lateral spots; lower fronto-orbital bristles three pairs, of which the lower two are standing on the lower lateral spot; lunula nearly half-moon-shaped, brown or dark brown; vertex with a distinct shining black transverse stripe, which is interrupted by the remarkably large ocellar triangle of the same colour. Face rather short, light waxy yellow, with two round or oval black spots, which are placed very low but not in contact with the oral border; median spot brownish, rather inconspicuous; eye-margins narrow, distinctly elevated and silverly white tomentose. Back of the head rather strongly convex, black, with the lemon-yellow, rather broad, but along the mouth-edge very narrow margin; cheeks rather short, with an indistinct brownish spot below the lower angle of the eye. All the bristles black, only the very fine occipital row yellowish brown. Antennae rather broad and short, reddish yellow, with the tip somewhat darkened; 1st joint very short, about  $\frac{3}{4}$  as long as wide; 2nd joint a little longer than wide and about twice as long as the preceding, the black median seta in the middle of the dorsal margin very conspicuous and about as long as the second joint; third joint about  $2\frac{1}{2}$  times as long as broad and a little longer than twice the 2nd, gradually narrowed towards the round tip; arista a little longer than the antenna, black with the base light yellow. Palpi very slightly curved upwards, gradually broadened towards the tip, which is hardly rounded; proboscis brown, with the tip yellow.

Thorax as in *diaphorus*, HENDEL, but the yellow middle stripe very short and the notopleural spot very small and brown; scutellum citron-yellow with the base black, the space between the insertions of the bristles black, this coloration extending towards the base of the scutellum, gradually narrowing but suddenly and strongly widened just before reaching the basal band, forming a conspicuously broad longitudinal stripe which in one specimen is nearly of the same width through the whole length. All the bristles black; the scutellar pair longer than the disc.

Abdomen black, the posterior margin of each tergite pale reddish yellow or orange-yellow, the yellow part on the 1st tergite very narrow and confined to the middle, on the 2nd broad and about half its length,

on the 3rd, 4th and 5th interrupted by a distinct median stripe, thus forming two semilunular bands which do not reach the lateral margins; the shining spots on the 5th tergite round but very inconspicuous; 5th tergite in a specimen with two ill-defined reddish yellow basal spots; ciliation of black bristly hairs on the 3rd tergite rather conspicuous. Ventral surface reddish orange-yellow; the sternites, except the 2nd, blackish castaneous brown.

Wings comparatively long, hyaline, the stigma,  $R_1$ , rather narrow anal stripe and the well-defined narrow apical spot blackish brown, the latter connected by a very fine stripe along the costal margin with the blackish colour of  $R_1$ ; a small infuscated spot at the corner of the 1st  $M_2$ ; 1st  $M_2$  rather suddenly but slightly narrowed in the basal half; the supernumerary lobe very short and not conspicuous; the shaggy black hairs very short and conspicuous.

Legs pale reddish yellow, the coxae and trochanters, the large roundish spot near the tip on outer surface of the anterior two pairs of the femora, the apical third of the hind femora, and the hind tibiae black; the apical joints of the tarsi somewhat brownish.

Length: Body 7-8 mm (♂), wings 7-8 mm (♂).

This species is rather near to *scutellaris*, BEZZI, but it distinctly differs in the shape of the spots on the frons, the facial spot well-isolated from the oral margin, the conspicuous anterior supra-alar bristle, the long lateral and very short median stripe of the thorax, the median stripe of the scutellum, the coloration of the legs and the wing-pattern; only two males captured by the author in Formosa (Tappan VI).

Type in the Entomological Museum of the Government Research Institute, Taihoku, Formosa.

## VII. Genus ZEUGODACUS, HENDEL.

LINDNER, *Flaiegen Palaearkt.* XVI, Trypetidae, pp. 25, 26 (Subgenus, (1927).

Genotype—*Dacus caudatus*, FABRICIUS.

This genus is very closely allied to *Chaetodacus* BEZZI, but easily distinguished by two pairs of scutellar bristles. Up to the present I

have seen 10 Japanese species in our collection, which may be distinguished by the following key :

**Key to the Japanese species.**

1. Wings with a brown subapical stripe (on m').
2. Median stripe of wings wanting (r-m not infuscated).
3. Brown costal band distinctly widened at the tip of the wing.
4. The costal band not reaching m along the apical margin of the wing; subapical stripe (on m) not conspicuous, nor extending below to the tip of the anal vein along the hind margin of the wing.
5. Scutellum with a large black apical spot; frons rather broad, much broader than  $\frac{1}{2}$  of the width of the head, parallel-sided.
6. Face with a pair of oblong black spots, which are extending to the oral margin, and also with a very narrow black median stripe on the lower third of the face; greyish tomentose median stripes on thorax wide apart from each other; tibiae black; femora with a broad black apical ring. Blackish species.....*arisanicus*, sp. nov.
66. Face with two pairs of black and brown spots, one of which placed just below the antennal bases, is very small and brown, the other, near the oral margin, is round and black; greyish tomentose median stripes broad and almost touching each other at their middle; tibiae yellow; femora with brownish tip. Brown or blackish species.....  
.....*scutellatus*, HENDEL (= *bezzi*, MIYAKE).
666. Face with three black spots, of which the median one is small and placed on the transverse furrow above the oral margin; scutellum with a transverse black apical stripe.....  
.....*ambiguus*, sp. nov.
55. Scutellum without well-defined black spot, frons broader than  $\frac{1}{2}$  of the width of the head, distinctly though slightly narrowed upwards; face with two black spots near the oral margin; greyish tomentose median stripes of thorax almost touching each other at the middle; femora yellowish, without dark apical ring; tibiae almost always yellowish, but the hind pair frequently dark brown. Yellowish brown to dark brown species.
6. Supernumerary lobe of male-wing small; scutellum brownish at apex.
7. Third antennal joint 3 ( $\delta$ ) or  $3\frac{1}{2}$  ( $\eta$ ) times as long as

- wide; palpi very slightly curved upwards (nearly straight); ovipositor cylindrical, much longer than the 3 preceding (except the 6th) tergites together.....*caudatus*, FABRICIUS.
77. Third antennal joint  $3\frac{1}{2}$  (♂) or 4 (♀) times as long as wide; palpi strongly curved upwards; ovipositor moderately depressed, about as long as the 3 preceding (except the 6th) tergites together.....*depressus*, sp. nov.
66. Supernumerary lobe of male-wings very large; scutellum never brownish at the apex.....*mobilis*, HENDEL.
44. The costal band reaching to m along the apical margin of the wing; subapical stripe very conspicuous, extending below to the tip of the anal vein along the hind margin of the wing, but it is not well-defined near the anal vein. Frons broader than  $\frac{1}{2}$  of the width of the head, parallel-sided; face with 2 rather small brown to black spots. Femora yellowish, near the apex somewhat brownish; tibiae light brown to dark brown. Scutellum yellow, without spot. Brownish species.....  
.....*synnephes*, HENDEL.
33. Brown costal band not widened at the tip, of nearly the same width through the whole length; subapical stripe rather indistinct. Frons about  $\frac{1}{4}$  as broad as head, nearly parallel-sided; face without black spot. Yellow median stripe of thorax rather broad, as broad as the yellow lateral stripe; scutellum yellow, without spot or stripe. Femora pale yellow, the apical half or two-thirds blackish; tibiae dark brown to blackish. Rather small blackish species .....*tibialis*, sp. nov.
22. Median stripe conspicuous; brown costal band narrow, not extending to the tip of m and distinctly but slightly widened at the tip of the wing; subapical stripe complete but rather narrow, connected with the median stripe by an indistinct brown stripe along m. Frons about  $\frac{1}{4}$  as broad as head, parallel-sided; face shining black, except the yellowish eye-margins. Thorax on dorsum with three very narrow yellow longitudinal stripes behind the suture; scutellum with a very large black apical spot. First and second tergite with a yellowish hind marginal band. Femora blackish, with the base yellowish; tibiae yellowish, but the hind pair almost entirely dark brown. Middle-sized black species .....*nigrifacies*, sp. nov.
11. Wings without subapical stripe.
2. Brown costal band scarcely widened at tip; face with a black spot; mesonotum with a yellow median stripe; scutellum with a black apical spot. ....  
.....*lipsanus*, HENDEL.
22. Brown costal band distinctly widened at tip; face and scutellum uniformly yellowish. Rather small yellowish species. ....*okunii*, sp. nov.

18. *Zeugodacus arisanicus*, sp. nov.

(Fig. 22; Pl. II, fig. 3)

A medium sized, black species, allied to *tappanus* and also to *scutellaris*, BEZZI; distinguished from the former by 4 scutellar bristles, the black apical third of femora, the blackish tibiae, the large round black spot of the scutellum, and the large triangular brown subapical stripe of the wing; from the latter easily by the wing-pattern and the colouring of the legs.

♂. Frons and vertex as in *tappanus*, but on the latter there are distinct though very weak ocellar bristles, and all the bristles are distinctly shorter than in *tappanus* although the brown hairs on the middle

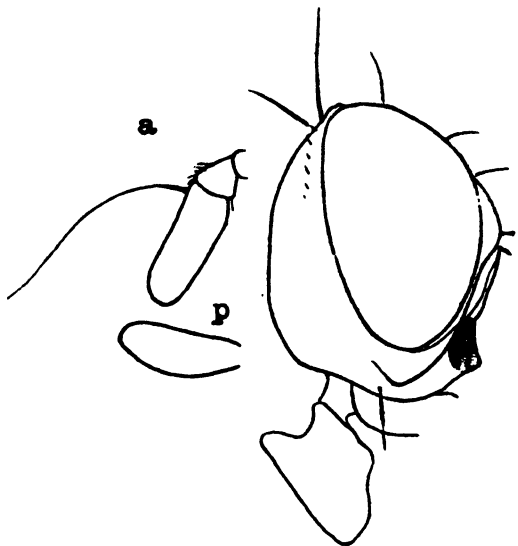


Fig. 22.

*Zeugodacus arisanicus*, ♂,  $\times$  ca 20. a, right antenna; p, left palpus.

part of the frons are conspicuously long. Face rather narrow, light waxy yellow, with two large oblong black spots which are placed rather near from each other, there is further one conspicuous, though very narrow and short, black longitudinal median stripe on the lower half; eye-margins very narrow. Back of the head coloured as in *tappanus*, but moderately convex, with the occipital row of bristles rather conspicuous and black; cheeks with a distinct blackish spot below the lower angle of the eye. Antennae yellowish, with the upper and apical margins of the 3rd joint blackish; 1st joint shorter than broad; 2nd joint about as long as its apical width, nearly triangular; 3rd joint narrowed towards the round tip, about  $2\frac{1}{2}$  times as long as the width

or the length of the preceding joint; arista longer than the antenna. Palpi yellowish white, rather broad, narrowed apically and rounded at the tip; proboscis dark brown, with the tip yellowish.

Thorax as in *tappanus*, but the two greyish tomentose median stripes are narrower and widely apart from each other, and also the yellow stripes are considerably narrower; scutellum with a very large round black apical spot which extends nearly all over the dorsum.

Abdomen black, with the hind margin of the 1st tergite, the posterior half of the 2nd, and two small triangular middle spots along the hind margins of the 3rd, 4th and 5th tergites reddish yellow; the shining spots on the 5th tergite rather small and round; ciliation of bristles on the 3rd tergite of the male black, of moderate length. Ventral surface as in *tappanus*, but the sides of the posterior half dull blackish.

Wings as in *tappanus*, but the shaggy hairs numerous and somewhat longer, and the infusate subapical stripe much larger and triangular, extending along the whole length of m.

Legs light orange-yellow, with the coxae, the trochanters, the apical third of the femora, the tibiae and the apical joints of the tarsi black; spur of middle tibiae black and of moderate length.

Length: Body and wings 6 mm (♂).

Only one male captured by Mr. SONAN in Formosa (Arisan X). Type in the Entomological Museum of the Government Research Institute, Taihoku, Formosa.

### 19. *Zeugodacus scutellatus*, HENDEL.

Suppl. Ent. I, pp. 20-21, pl. 1, Fig. 4 (*Dacus*) (1912).

*Dacus trivittatus*, MATSUMURA (nec WALKER), Thous. Ins. Japan, Addit. II, p. 411, pl. XXIII, fig. 9 (1916).

*Dacus bezzi*, MIYAKE, Bull. Imp. Centr. Agr. Exp. Stat. Japan, II, no. 2, p. 146, pl. II, fig. 2, pl. X, fig. 2 (1919).

A medium-sized, rather blackish species; distinguished by the three entire black transversal bands on the abdomen, the subequidistant lateral spots of the frons, an oblong black spot on the inner side of

the hind tibiae, and the transverse oblong shining spots on the 5th tergite.

Frons rather broad, but narrower than the eye, very slightly widened forwards, lemon-yellow to greyish yellow, with 3 pairs of blackish lateral spots, the middle pair distinctly nearer the upper than the lower one; two bristles arising from each lower spot; in the middle there is also a rather large subquadrate patch of blackish brown to light brown colour; some specimens have the frons uniformly coloured without any spots; lunula comparatively narrow and small, shining black to castaneous brown; vertex with one pair of obliquely transverse lateral black or dark brown spots and with a comparatively small black ocellar triangle, the former in some specimens connected with the ocellar spot. Face rather broad, light waxy yellow, with two rather small, round, black spots; eye-margins narrow, moderately widened below, slightly covered with a greyish tomentum. Back of the head moderately convex, light waxy yellowish, but the margin lemon-yellow; cheeks rather short and narrow, with an inconspicuous brown spot below the lower angle of the eye. All the bristles black, rather strong, only the occipital row is very weak and very sparse. Antennae rather narrow and long, very light reddish yellow; 1st joint a little longer than wide; 2nd joint about  $1\frac{1}{2}$  times as long as wide or length of the basal joint, with a long black middle bristle; 3rd joint darker than the rest, very long, about 4 times as long as wide and about  $2\frac{1}{2}$  times as long as the preceding one, gradually narrowed towards the round tip; arista black, with the base yellowish, longer than antenna. Palpi rather long, slightly or in the female strongly curved upwards, with the tip rounded; proboscis dark brown, with the tip somewhat yellowish.

Thorax comparatively narrow at the anterior margin, black, with three yellow stripes, and the base of the wings reddish or yellowish brown; whole surface obscured by a greyish tomentum and also by a light yellow pubescence, with the exception of three narrow non-tomentose longitudinal stripes; of the latter the middle one is finer and hardly extends to the streaks bordering the median yellow stripe; the latter is somewhat spindle-shaped and does not reach the posterior



margin of the disc; the submedian lateral non-tomentose stripes being interrupted at the suture, and distinctly widened at the anterior and posterior margins of the disc, but when seen from the side they seem of nearly the same width through their length; the yellow lateral stripes hardly reach the scutellum; humeral calli yellow, rather long, when seen from above about twice as long as wide or longer than half the anterior margin (between the humeral calli) of the disc; sutural and notopleural spots distinct, yellow. Pleurae black, with the anterior third yellowish or reddish brown, also very often yellowish or reddish brown behind the yellow mesopleural spot; sternopleural spot distinct, but almost always small, while the metapleural spot is large; mesophragma black or blackish brown. Scutellum orange-yellow with a transverse, oblong, black apical spot. All the bristles black, moderate in length.

Abdomen yellow to orange-yellow, obscured by a whitish pubescence; first tergite blackish at the anterior and lateral margins, sometimes with a triangular blackish spot in the middle; second, third and fourth tergites with a black basal band, which on the second is interrupted before reaching the lateral margins and on the third is produced posteriorly into a short triangular projection in the middle; on the 4th tergite a similar median posterior projection, which is longer and finer than the preceding one, but is hardly connected with the median black streak of the fifth tergite; on the latter there is also a broad, black basal band interrupted in the middle, and it has two rather large, transverse, elongate shining patches; the ciliation of bristles on the third tergite of the male black, the bristles of moderate length; 6th tergite in the female distinct, yellow with a short black longitudinal stripe; ovipositor rather depressed, reddish yellow to castaneous brown, the basal joint distinctly longer than the fifth tergite. Ventral surface orange-yellow, but the last two sternites always castaneous or blackish brown, and often all the sternites blackish.

Wings hyaline, rather broad, with broad 1st M<sub>1</sub> and R<sub>1</sub>, with the veins blackish brown; stigma and R<sub>2</sub> brown to blackish brown, this colour extending to before the middle of the mouth of R<sub>2</sub> along the wing-margin and distinctly widened on R<sub>1</sub> and R<sub>2</sub>; anal streak blackish

brown to brown, in the male rather broad, its tip covered with numerous black shaggy hairs and connecting with the infuscated apical corner of the axillary cell; m distinctly and widely bordered with brown; supernumerary lobe of the male rather large.

Legs light yellow, with the coxae, trochanters, basal third of hind tibiae and tip of hind femora blackish or brownish; hind tibiae with an elongate black or brown spot on the apical third of the inner side; apical joints of tarsi and sometimes tip of the anterior two pairs of femora, and base and tip of anterior two pairs of tibiae brownish.

Length: Body (without ovipositor) 7.5–9 mm (♂ ♀); wings 7–8.3 mm (♂ ♀).

Between the Japanese *bezzi* and the Formosan *scutellatus* (Type) there is no difference in morphology nor in colouration.

Hab. Japan - Tokyo (VIII), Kakisaka (VIII), Tsukumi (VIII), Kumamoto (IV), Miyasaki (VIII), Kagoshima (VIII), Sakurajima (VIII), Amami-Oshima (VII), Okinawa (VII).

Formosa—Koshun (X).

Type of *scutellatus*, HENDEL, in the Entomological Institute of the Kaiser-Wilhelm Gesellschaft, Berlin-Dahlem; that of *bezzi* MIYAKE is not preserved in any of the collections in Japan, and probably has been destroyed.

## 20. *Zeugodacus ambiguus*, sp. nov.

(Fig. 23; Pl. II, fig. 4.)

A blackish brown, medium-sized species; very closely allied to *scutellatus*, HENDEL, but distinguished by the r-m being situated near the middle of 1st M., further by the scutellum having a rather small transverse brown apical spot, by two oval black spots on the face, by 3 rather broad yellow postsutural stripes on the thorax, by a transverse brownish spot at m, by the entirely blackish hind tibiae, and by two entire and two interrupted black bands on abdomen.

♂. Frons rather broad, but distinctly narrower than the eye, parallel-sided, pale yellowish brown, with 3 pairs of small brown equi-

distant dots, two bristles arising from the lower one; in the middle there is also one rather small brown transversal spot, covered with a



Fig. 23.

*Zeugodacus ambiguus*, ♂,  $\times$  ca 20. a, right antenna; p, right palpus.

few brown hairs; lunula brownish; vertex with rather small blackish ocellar triangle, and also with a narrow posteriorly curved brown transversal stripe which is interrupted behind the ocellar triangle. Face of moderate width, light waxy yellow, with two medium-sized oval black spots; eye-margins moderate in width, distinctly broadened below, slightly whitish tomentose. Back of the head moderately convex and uniformly light yellow, the occipital row consisting of a very few weak bristles. All the bristles (except the occipital row) rather long and black. Antennae of moderate length, yellow, with the apical joint very slightly brownish; 1st joint about as long as wide; 2nd joint a little longer than its apical width, about  $1\frac{1}{2}$  times as long as the first one and the middle bristle not longer than width of the joint; 3rd joint about 3 times as long as wide, or about  $2\frac{1}{2}$  times as long as the 2nd, gradually narrowed towards the narrowly rounded tip; arista blackish, with the base yellow, about as long as the antenna. Palpi light yellow very slightly curved upwards, in the middle rather broad with the tip rounded.

Thorax black, but middle of praesutural portion reddish yellow, greyish dusted, with 3 very narrow, non-tomentose longitudinal stripes, of which the middle one is finer and does not extend behind the suture; humeral, notopleural and sutural spots distinct, yellow; 3 postsutural stripes hardly reaching to the scutellum, bounded by narrow non-tomentose streaks, of which the middle one is broader than the lateral ones, but pointed anteriorly; humeral calli when seen from above rather short and broad, about half as long as the width of the anterior margin of the disc between the humeral calli, and about  $1\frac{1}{2}$  times as long as wide. Pleurae yellowish brown, with rather large yellow spots, of which the largest one is on the mesopleura and broadly bordered with blackish colour at the anterior margin, and the smallest one is on the sternopleura, comparatively long and distinctly longitudinal; mesophragma black, but its narrow middle part pale. Scutellum lemon-yellow, with a rather small transverse brown apical spot. All the bristles black.

Abdomen light reddish brown; 1st tergite blackish along the lateral and anterior margins; 2nd tergite with a black basal band not reaching the sides which are also black in the basal half; 3rd tergite with a rather broad, entire, black basal band; 4th and 5th tergites with a rather broad, black or blackish lateral band along the anterior margin; 3rd to 5th tergites with a black median stripe, which is interrupted at the segmentations; the shining spots of the 5th tergite oval; ciliation of bristles of the 3rd tergite black, comparatively long; ventral surface of the abdomen reddish orange-yellow, with the apical part blackish.

Wings comparatively long, hyaline, very indistinctly infuscated; stigma and  $R_1$  brown, forming a distinct costal band, which extends to the middle of the mouth of  $R_1$  along the wing margin, and is slightly widened on  $r_{4+5}$ ; anal streak broader than the costal band, with rather numerous black shaggy hairs on the apical portion; supernumerary lobe large; subapical stripe very indistinct, rather transverse along the hind wing-margin.

Legs yellow; the coxae, trochanters and tibiae of the hind legs black or brown; apical joints of tarsi somewhat brownish; spur of middle tibiae rather short, black.

Length: Body 6.5 mm; wings 6.5 mm.

Only one male (type) captured at Koshun (IV), Formosa; preserved in the Entomological Museum of the Government Research Institute, Taihoku, Formosa.

This species may be a variety of *scutellatus*, HENDEL.

## 21. *Zeugodacus caudatus*, FABRICIUS.

Syst. Antl., p. 276 (*Dacus*) (1805).

A large, brownish species, distinguished by the broad frons, the large brown apical spot of the wing, the small supernumerary lobe of the male wing, and the long cylindrical basal joint of the ovipositor.

Frons broad, about as wide as the eye, slightly broadened forwards, lemon-yellow but often light brownish yellow, with 3 equidistant brown lateral spots, the lower one possessing two or three orbital bristles or very rarely only one, in the middle there is also an indistinct large brown spot covered with brown pubescence; lunula comparatively small, shining brown or castaneous; vertex with or without a pair of small, narrow, oblique brown lateral spots, and with a small black ocellar triangle. Face rather broad, light waxy yellow, with two rather small, round or oblong black spots; eye-margins moderate in width, very slightly widened below, covered with a whitish tomentum. Back of the head moderately convex, light waxy yellowish, with the margin lemon-yellow, this coloration broadening below cheeks; the latter are rather long and broad, and possess a narrow brownish longitudinal spot extending from just below the lower angle of the eye to the mouth-edge. All the bristles blackish brown to black; occipital row distinct but very short. Antennae light brownish yellow, with the third joint darkened apically; 1st joint about as long as wide; 2nd joint about  $1\frac{1}{2}$  times as long as wide, the tip distinctly and rather suddenly broadened, the middle bristle brownish yellow and not strong; 3rd joint about  $3\frac{1}{2}$  times, in the male about 3 times as long as wide, its base distinctly widened and the tip narrowed; atista brown, with yellow base, about as long as the antenna. Palpi rather small, moderately curved upwards,

about as wide as the 3rd antennal joint, with the tip rounded; proboscis dark brown.

Thorax black, obscured by a greyish tomentum, a subquadrate spot along the interior margin of the humeral callus, two longitudinal middle praesutural streaks, the lateral portion just above the wing base and a triangular spot along the posterior margin reddish brown to yellowish brown; on the disc there are 3 longitudinal praesutural and 6 postsutural bare streaks; of the latter the middle pair is the broadest and connects with the brownish praesutural streaks, the lateral pair is placed along the interior margin of the lateral yellow streaks, and the intermediate pair is narrowest and hardly connecting with the praesutural lateral bare streaks, the praesutural middle bare streak very often becoming reddish brown; 3 yellow postsutural streaks very distinct, not reaching the posterior margin of the disc, the middle one shorter than the others; yellow humeral spots rather short, the sutural spots small but distinct and bordered with reddish brown. Pleurae black, with the anterior third or often also the wing-base reddish brown; noto-, meso-, meta- and sterno-pleural spots distinct, orange-yellow; mesophragma blackish brown to black, often paler in the middle part. Scutellum lemon-yellow, with the apex somewhat brownish. All the bristles black, but the praescutellar bristles sometimes yellowish brown.

Abdomen yellowish; 1st tergite with two large black lateral spots, which are connected with each other along the basal margin; 2nd tergite with the sides and the middle part of the base black; third tergite in the basal half black; 4th and 5th tergites along each basal margin with one black band which is interrupted in the middle; 3 apical tergites with a narrow black longitudinal median stripe which is often interrupted on the posterior margin of the third tergite and also very rarely on the 4th segmentation; ciliation of bristles of third tergite of male black, of moderate length; ovipositor long and rather slender, reddish brown, its basal joint cylindrical and about as long as the 4th and 5th tergites together. Ventral surface of abdomen reddish orange-yellow to reddish yellow, the base and often also the apical portion blackish, the sternites (except the 2nd one) brown to blackish.

Wings comparatively long, hyaline, very slightly brownish; stigma and  $R_1$  blackish brown, this colour extending to the middle of the mouth of  $R_1$  along the wing-margin and conspicuously widened at the tip, so that it is forming a distinct rounded spot; anal streak rather narrow but very conspicuous, nearly reaching the wing-margin; posterior corner of 1st  $M_2$  infuscated;  $R_5$  yellowish; supernumerary lobe of male small, black shaggy hairs of male rather numerous; posterior corner of axillary cell of male very often greyish.

Legs yellow, the coxae, trochanters and tibiae of the hind legs blackish; on the outer base of the anterior two pairs of tibiae a narrow and short blackish or brownish longitudinal streak; apical joints of tarsi almost always brownish; spur of middle tibiae black and rather long.

Length: Body (without ovipositor) 9-10 mm ( $\delta$  ♀); wings 9-10 mm ( $\delta$  ♀).

Hab. Formosa—Toroen (X), Funkiko (X), Kayahara (IX), Kuru (IX).  
Java; India; Ceylon.

Types in the Zoological Museum of Copenhagen, Denmark.

## 22. *Zeugodacus depressus*, sp. nov.

(Fig. 24; Pl. II, fig. 5)

A large, brownish species; closely allied to *caudatus*, FAB., but distinguished from that by the following points:

$\delta$  ♀. Third antennal joint of the male about  $3\frac{1}{2}$  times, of the female about 4 times as long as wide; palpi rather large, strongly curved upwards, with the tip moderately in the male rather distinctly pointed; thorax reddish brown, the disc with a pair of transverse, somewhat triangular, black praesutural and a pair of oblong black postsutural spots, the two spots on each side nearly connected at the interior end of the suture; yellow spots and stripes of thorax broader; brownish apical spot of scutellum obsolete; pleurae yellowish or reddish brown, the front margin of the yellow spot of the mesopleuron and the portion below the large yellow spot of the sternopleuron blackish; mesophragma blackish, with a distinct broad reddish median stripe; shining spots on

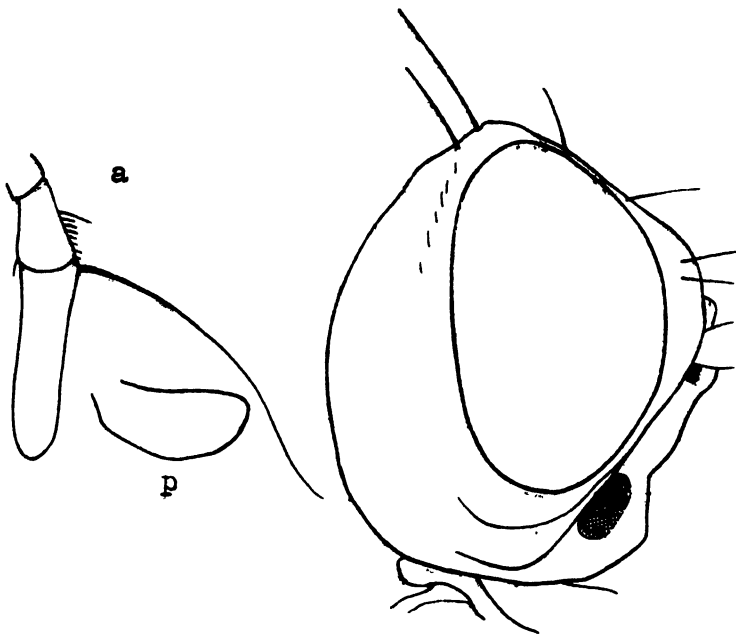


Fig. 24.

*Zeugodacus depressus*, ♀,  $\times$  ca 20. a, left antenna; p, right palpus.

the 5th tergite broad, about semicircular (in *caudatus* transverse-oblong); basal joint of ovipositor moderately depressed, distinctly shorter than the 4th and 5th tergites together; wings conspicuously narrowed towards the tip, their outer margin being nearly straight; infuscation on m very faint; legs paler.

Length: Body (without ovipositor) 9-10.5 mm ( $\delta$  ♀), wings 9.7-10 mm ( $\delta$  ♀).

Hab. Japan—Nagano-ken (Kiso-fukushima IX), Yamanashi-ken, Gifu-ken, Shiga-ken.

Formosa—Tattaka (VIII).

Host—*Cucurbita moschata*, DUCHESNE.

### 23. *Zeugodacus nubilus*, HENDEL.

Suppl. Ent. I., pp. 16-18, Pl. 1, fig. 2 (*Dacus*) (1912).

*Dacus caudatus*, ENDERLEIN, Zool. Jahrb. Abt. Syst. XXXI, Heft. 3, p. 409, ♀ ♂, (1911).



This species has been considered by some dipterologists as a variety of *caudatus*, FABRICIUS, but I take it to be a good species because I find certain morphological differences; it may be distinguished as follows: Its size is small; the frons never possesses lateral spots but the middle spot is very striking and the vertical transverse band is almost always very distinct; the scutellum is never browned at the apex; the abdominal bands are narrower, and the abdominal median stripe is never interrupted at the segmentations; the basal joint of the ovipositor is short and depressed; the supernumerary lobe of male wing is conspicuously large and produced.

Length: Body (without ovipositor) 6-8 mm (♂ ♀), wings 6.5-8.5 mm. (♂ ♀).

Hab. Formosa—Taipin (IV), Tabo (VIII), Tamaru (VIII), Ryuganrin (V), Kagi (VIII), Tainan (V, VII), Mato (III), Takao (XII, I), Kosempo (I), Heito (XII), Kobayashi (VIII), Taito (VI), Arisan (X), Musha (V, VI), Jukirin (II), Kayahara (IX), Naihumpo (X), Kauiran (IX), Hori-sha (XII), Shimpo (IX), Kanshirei (X), Rikiriki (III), Hatsune (V), Takesaki (XI), Karenko (V), Yeboshi (IX), Riran (V), Domon (V), Kappansan (IX), Taikai (IX), Shimpo (IX), Choshu (XI), Tappan (VI), Chikushimon (XII), Yoshinomura (V), Taihoku (VIII).

Hosts—*Cucurbita moschata*, DUCHESNE; *Luffa cylindrica*, ROEN.; *Lagenaria leucantha*, RUSBY; *Cucumis Melo*, LINN.

Types in the Entomological Institute of the Kaiser-Wilhelm Gesellschaft, Berlin-Dahlem.

#### 24. *Zeugodacus synnephes*, HENDEL.

Ent. Mitt. II, p. 40, Fig. 2, ♀ (*Dacus*) (1913).

A small to medium-sized, yellowish or reddish brown species; very closely allied to *cucurbitae*, COQUILLET, but easily distinguished from that by possessing 4 scutellar bristles.

Frons broad, about as wide as, or a little narrower than, the eye,

parallel-sided but in some specimens very little widened forwards, yellow, without the usual lateral spots, but with a median brownish pubescent spot which becomes often very large and rarely very indistinct, with only two, or very rarely three, pairs of lower fronto-orbital bristles; lunula castaneous brown to dark brown; vertex with a small black ocellar triangle, and between the upper angles of the eyes a very indistinct narrow brownish transverse band, which is always interrupted at the ocellar triangle and very often absent. Face moderately widened below, light yellow, with the usual two small round black spots; eye margins of medium width, distinctly covered with a white tomentum. Back of the head rather strongly swollen, light brownish yellow, with the very broad margin light waxy yellow to light yellow; cheeks broad and rather long, with a rather large brownish spot just below the lower angle of the eye. All the bristles black or blackish brown; the occipital row very short and very sparse. Antennae yellow with the apical joint brownish, rather large; 1st joint distinctly and strongly widened towards the tip, about as long as wide; 2nd joint a little longer than the basal joint, somewhat triangular, the tip being broadly widened, the middle bristle not very conspicuous and rather weak; 3rd joint about 3 or  $3\frac{1}{2}$  times as long as wide or about  $2\frac{1}{2}$  times as long as the preceding one, gradually but rather distinctly narrowed towards the rather narrowly rounded tip, where it is almost always more brownish; arista about as long as the antenna, blackish, its basal part yellow. Palpi light yellow, strongly curved upwards, their tip rather broadly rounded, but comparatively narrow in the female; proboscis dark brown, with the tip light yellow.

Thorax reddish brown, covered with a light yellowish pubescence; the humeral calli, praesutural spots, and 3 broad postsutural longitudinal stripes yellow; between the humeral callus and the praesutural spot on each side there is a triangular black spot, and between the median and lateral yellow longitudinal stripes a large black subquadrate spot which does not reach the posterior margin of the disc and is almost always connected with the triangular praesutural spot at the interior end of the suture; median postsutural stripe spindle-shaped, extending a little in

front of the sutural line but ending rather far from the posterior margin of the disc; lateral postsutural stripe strongly curved outwards in the anterior part, not reaching the posterior margin of the disc, of about the same width as the middle stripe; humeral spot when seen from the dorsum rather short and a little longer than wide, with a narrow fore margin brown to black; on the disc with two rather distinct but not very broad greyish tomentose longitudinal stripes, which are hardly reaching the front and hind margins of the disc. Pleurae reddish brown to brown, with the usual yellow spots, of which the sternopleural one is comparatively large, all the spots almost always more or less bordered with blackish, with the exception of the notopleural spot; mesophragma black, the narrow middle part almost always reddish brown or brown; scutellum uniformly yellow, somewhat triangular, the tip narrowly rounded. All the bristles black or blackish; praescutellar bristles rather conspicuous.

Abdomen rather narrow, reddish yellow to orange-yellow, with yellowish white pubescence; 1st tergite with a pair of black lateral spots which extend to just before the posterior margin of the 2nd tergite along the side-margin, but are distinctly narrowed hindwards; 2nd tergite with a transverse brownish black to black basal band only occupying in the middle third; 3rd tergite black in the basal third or half, this coloration very rarely nearly interrupted in the middle; each of the 4th and 5th tergites with a pair of rather short transverse lateral spots which are almost always subquadrate and widening towards the sides; 3rd to 5th (♂) or 6th (♀) tergites with a distinct narrow black longitudinal stripe which is very rarely interrupted at the segmentations; 6th tergite in the female distinct but very short; ciliation of bristles of third tergite of male comparatively long; ovipositor light castaneous, rather short, its basal joint very broad, slightly depressed and a little longer than the 5th tergite; shining spots of the 5th tergite very large, round. Ventral surface of abdomen light yellow, with comparatively broad blackish brown sternites, except the 2nd which is yellowish as usual.

Wings moderate in size, hyaline and very little brownish towards the tip; costal band brown to dark brown, rather broad but not extend-

ing along  $R_1$ , and reaching the tip of  $m$  (rarely not reaching so far); its apical part becomes very broad and forms a semicircular spot, the interior margin of which is straight from the tip of  $R_1$  to the end of  $m$ ; this apical spot very rarely contains one or two hyaline spots; anal stripe and subapical stripe brown, the latter very striking and broader than the anal one, and extending to just below the middle of  $R_1$  (in *cucurbitae* never so far); its posterior end is bent in a right angle closely following the course of  $cu$ , and never touches the wing margin except at the tip of  $cu$ ; supernumerary lobe of male wing distinct, the black shaggy hairs rather distinct.

Legs yellow, the coxae (sometimes also trochanters) and tibiae brown, especially in the posterior legs distinctly darker; femora with an oblong not well-defined castaneous brown spot on the posterior side of the tip, this spot very often faint; apical joints of tarsi (almost always 2nd to 4th) brownish or rarely blackish; spur of middle tibiae long and striking.

Length: Body (without ovipositor) 6.3–8 mm ( $\delta$  ♀); wings 6–7.5 mm ( $\delta$  ♀).

Hab. Formosa—Arisan (X), Fuhosho (III), Kotosho (III), Karenko (VII), Domon (V), Koshun (IV), Kuraru (V), Taito (II, III), Kankau (VIII), Kosempo (VI, III), Kagi (VIII), Suisharyo (X).

Hosts—*Bryonopsis laciniosa*, NAUD.; *Melothria formosana*, HAYATA.

Type in the Entomological Institute of the Kaiser Wilhelm Gesellschaft, Berlin-Dahlem.

## 25. *Zeugodacus synnephes* var. *dobaensis*, nov.

This variety very much resembles the lighter coloured specimens of *synnephes*, from which it differs in the following points:

The middle spot of the frons very distinct, elongate (in *synnephes* transverse), with dark brown pubescence; thorax reddish, with orange-yellow spots and stripes, the black spots much reduced; scutellum reddish orange-yellow; mesophragma reddish yellow, with two black stripes; 3rd to 5th tergites reddish brown; apical spot of the wings little developed, represented only by a slight broadening of the costal

band, the extreme end of which extends below to the tip of m along the wing margin, forming a narrow and very faint band; legs light yellow, with a distinct castaneous spot at the tip of each femur and with the posterior tibiae black.

Length 7 mm (♂ ♀); wings 6.5 mm (♂ ♀).

Hab. Formosa—Doba (IX).

Types in the Entomological Museum of the Government Research Institute, Taihoku, Formosa.

## 26. *Zeugodacus tibialis*, sp. nov.

(Fig. 25; Pl. II, fig. 6)

A blackish, small species; allied to *lipsanus*, HENDEL, but distinguished by the uniformly light yellow face, the uniformly lemon-yellow scutellum, the brown costal band which is not widened at the tip, the slightly infuscated m, and the blackish tibiae of the female.

♂ ♀. Frons rather broad, but distinctly narrower than the eye, in the male very often widened forwards, light yellow with 3 pairs of very

small brown lateral dots, of which the lower two pairs very often disappear (in *lipsanus* very often very conspicuous and confluent), and the lowermost carries two (in *lipsanus* only one) lower fronto-orbital bristles; the middle part somewhat brownish, but no well-defined spot is formed, and very often this infuscation disappears; lunula rather large,

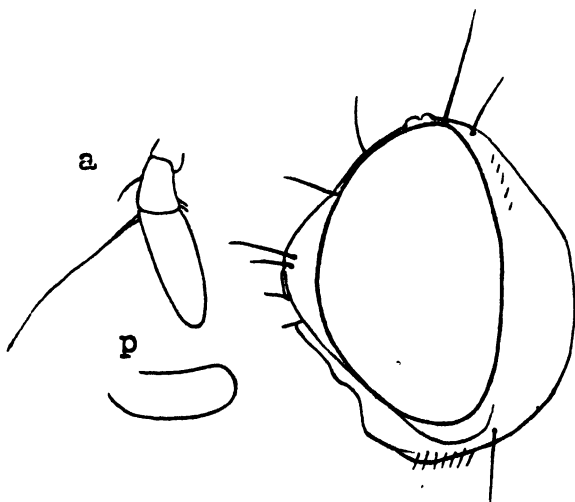


Fig. 25.

*Zeugodacus tibialis*, ♀, × ca 20. a, right antenna.

p, right palpus.

brown to castaneous; vertex with a distinct black or brown transverse arc which is sometimes interrupted on both sides of the rather small black ocellar triangle. Face rather broad, light waxy yellow, in one female from Taito with two very faint small brownish spots; eye-margin very narrow, moderately covered with a whitish tomentum. Back of the head moderately convex, castaneous to blackish, except for the rather broad lemon-yellow margin, this colour rather slightly widened below to the cheeks; the latter rather narrow and short, with an indistinct brown spot just below the lower angle of the eye, this spot sometimes extending to the lower corner of the antennal groove. All the bristles black, the occipital row comparatively distinct but very sparse (only 4 or 5). Antennae orange-yellow to light yellow, brownish towards the tip; 1st joint a little shorter than wide; 2nd joint about twice as long as the basal one and about  $1\frac{1}{2}$  times as long as wide, with a very long black middle bristle; 3rd joint rather short (in *lipsanus* comparatively long), about twice ( $\delta$ ) or  $2\frac{1}{2}$  ( $\varphi$ ) times as long as the preceding one and about 3 ( $\delta$ ) or  $3\frac{1}{2}$  ( $\varphi$ ) times as long as wide, gradually narrowed towards the tip, which is rather narrowly rounded; arista blackish with the basal part reddish yellow to yellow, distinctly longer than the antenna. Palpi comparatively large, very slightly curved upwards with the tip, broadly rounded with scarcely any differences between male and female; proboscis brownish.

Thorax black, with 4 rather distinct and narrow greyish tomentose longitudinal stripes, of which the middle pair extends from the anterior margin of the disc to before the posterior margin, and is distinctly separated from each other as a rule; in two specimens from Taito, however, they nearly touch just before the middle postsutural stripe; the outer pair of these greyish tomentose stripes is interrupted at the suture, their triangular front portion lying between the humeral callus and the praesutural spot, their posterior portion very narrow and nearly reaching the posterior margin of the disc; humeral callus, praesutural spot and 3 postsutural stripes rather broad (but in two specimens from Taito the stripes narrow), lemon-yellow; humeral callus when seen from dorsum about  $1\frac{1}{2}$  times as long as wide, the stripes of about the

same length and width, not reaching the posterior margin of the disc. Scutellum lemon-yellow, without apical spot. Pleurae and mesophragma black, except the anterior part of the former and a narrow median stripe of the latter, which are reddish brown; lemon-yellow spots large, but one on the sternopleuron of moderate size and comparatively broad; all the bristles black and rather strong.

Abdomen in coloration as in *lipsanus*, but the black bands and lateral spots always broader, and the band on the second tergite never interrupted, but sometimes with two sinuses in each margin; in the specimens from Taito the 3rd tergite entirely black, and the lateral spots of the 4th and 5th so much enlarged that these tergites show only two small reddish triangular spots; 6th tergite of female very short and the middle stripe rather indistinct; ciliation of bristles of 3rd tergite of male comparatively long; ovipositor reddish brown, the basal joint very long, longer than the 4th and 5th tergites together, somewhat depressed, with distinct blackish lateral edges.

Wings of moderate size, hyaline; stigma and R<sub>1</sub> blackish brown, this colour extending to the middle of the mouth of R<sub>2</sub> along the wing-margin in nearly the same width throughout the whole length; anal streak blackish brown, about the middle somewhat broader than the costal band; m infuscated on the lower half; supernumerary lobe of the male rather large, the black shaggy hairs very conspicuous.

Legs yellow, posterior two pairs of coxae, front femora (except the base), an apical ring of the posterior two pairs of femora, the basal third of the anterior two pairs of tibiae, nearly the entire posterior tibiae and the apical joints of the tarsi blackish brown; in the female the tibiae wholly blackish brown and the ring of femora occupying nearly the whole apical third or half. Spur of middle tibiae strong and black.

Length: Body (without ovipositor) 6-6.5 mm (♂ ♀), wings 5.5-6 mm (♂ ♀).

Hab. Formosa—Kashoto (X), Taito (II, III).

Host—*Cucurbita maxima*, DUCHESNE.

Types in the Entomological Museum of the Government Research Institute, Taihoku, Formosa.

27. *Zeugodacus nigrifacies*, sp. nov.

(Fig. 26; Pl. III, fig. 1)

A rather small, black species: Allied *bipustulatus* BEZZI or *scutellaris* BEZZI, but easily distinguished from the former by the 3 pairs of lower fronto-orbital bristles and the brown semi-striped wings; from the latter by the black face and the wing pattern; also distinguished from any other *Dacus* (s. l.) in Formosa by the black face, the brown frons, and the broadly infuscated r-m and m.

♂ ♀. Frons rather narrow, parallel-sided, about  $\frac{1}{4}$  as wide as the head, light brown, with the margins yellow; three pairs of brown lateral spots equidistant,

of which the middle one is very small and very inconspicuous, and the lower one possesses two fronto-orbital bristles; lunula well transverse, linear, shining, brown or dark brown; vertex with broad black transverse band through over the

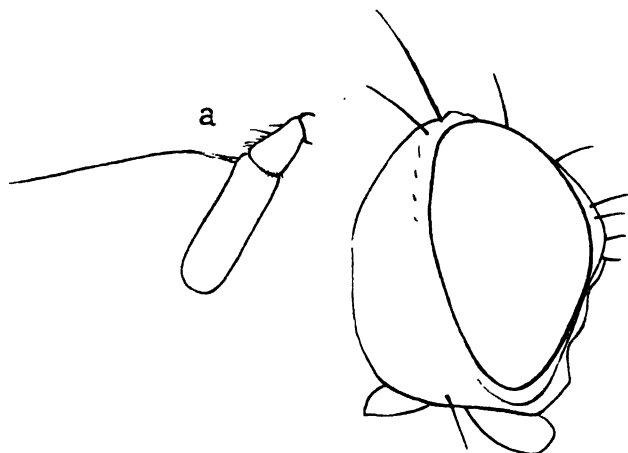


Fig. 26.

*Zeugodacus nigrifacies*, ♀,  $\times$  ca 20.

a, right antenna.

rather small black ocellar triangle. Face rather broad and short, shining black, its margins very narrowly reddish yellow; eye-margins very narrow, light reddish brown, obscured by grey tomentum, very slightly widened below. Back of the head moderately convex, shining, castaneous black or black, its eye-margins light orange-yellow, this colour at the upper end becoming brown or castaneous brown; just behind the transverse band of vertex there is a narrow transverse yellow band which is triangularly producing posteriorly in the middle; cheeks rather narrow, light orange-yellow, with a large brown spot just below the



lower angle of eye. All the bristles black, rather short; the occipital row conspicuous. Antennae brownish black, its lower surface yellow; 1st joint about as long as wide; 2nd joint somewhat paler at its tip, a little longer than its apical width or basal joint, with long and black median seta; 3rd joint somewhat lanceolate, in the female with rounded tip, about 3 times as long as wide or longer than twice the 2nd joint; arista blackish, with the base yellowish, about as long as the antennae. Palpi light reddish yellow, sometimes its tip blackish, rather broad and short, slightly curved upwards, with the tip broadly rounded; proboscis reddish brown.

Thorax rather rounded, black, covered with light yellowish pubescence, with two greyish-tomentose longitudinal stripes which are not reaching the posterior margin of the disc, but slightly touching each other before a very narrow, short, yellow median postsutural streak; yellow lateral postsutural streaks very narrow, not reaching the hind margin of the disc, longer than the median one; humeral spot rather small; praesutural spot very small and indistinct; notopleural spot rather conspicuous; all these spots yellow. Pleurae black, with two rather narrow yellow spots, each on the meso- and metapleuron; sternopleural spot wanting, but there is an indistinct brown trace; mesophragma black. Scutellum yellow, with a black basal band and with a rather large rounded black spot at apex. All the bristles black, comparatively long, especially the apical pair of scutellum being strong and much longer than the disc.

Abdomen comparatively small, black, with the posterior margin of the 1st tergite and the posterior one-third of the 2nd tergite reddish yellow, sometimes the posterior margin of the 5th tergite reddish brown; shining spots on the 5th tergite transverse-oblong; ciliation of bristles of the 3rd tergite of male black, rather short; 6th tergite of female brownish black, rather broad; ovipositor moderately depressed, yellowish, with the basal joint black, the latter being longer than the 5th tergite. Ventral surface yellow to reddish yellow, often darkened towards the anal end, the sternites being castaneous black, but the 2nd sternite yellowish.

Wings rather long and broad, hyaline; brown costal band and anal streak rather narrow, the former slightly widened apically running through the stigma and  $R_1$ , and reaching the middle of the mouth of  $R_5$ ; anal streak not reaching the wing margin; the black shaggy hairs in male very short and inconspicuous; the supernumerary lobe in male very large and striking; in the middle with two rather broad, but short, brown transverse bands, one of which is placed on r-m and the other on m-cu, the both in male connecting obliquely on m each other.

Legs brownish black, with the tarsi, two pairs of anterior tibiae and the basal third of hind femora yellowish; dorsal side of hind tibiae in male with a rather distinct yellowish longitudinal streak through the whole length; the spur of middle tibiae black, of moderate length; apical joints of the tarsi sometimes slightly tinged with brown.

Length: Body (without ovipositor) 7-7.3 mm ( $\sigma$  ♀); wings 6.8-7 mm ( $\sigma$  ♀).

Hab. Formosa—Arisan (IV), Tamaru (IX).

Types in the Entomological Museum of the Government Research Institute, Taihoku, Formosa.

## 28. *Zeugodacus lipsanus*, HENDEL.

Ann. Mus. Nat. Hung. XIII., p. 427 1915.

*Dacus*  $\alpha$ , HENDEL. Suppl. Ent. I., p. 22 (1922).

A small blackish species, distinguished by three black longitudinal stripes on face, two rather broad black longitudinal spots in lower half of frons, one small rounded black spical spot on scutellum, the non-infuscated m-cu and the rather small supernumerary lobe in male wing. Rather near to *scutellinus*, BEZZI.

$\sigma$  ♀. Frons rather narrow, about  $\frac{1}{2}$  as wide as head, parallel-sided, lemon-yellow, with three pairs of black equidistant lateral spots, which do not often appear and the lower pair of which possesses only one fronto-orbital bristle; in the middle with a rather small black to dark brown spot, and in the lower half with also two subquadrate black longitudinal spots connecting with the middle one, these two being often disappeared, especially in the female; lunula small, but comparatively

broad, yellowish brown to black; vertex with a narrow, very faint, brown transverse band through the comparatively small black ocellar triangle, this band often disappeared. Face light yellow to yellow, with 3 black longitudinal stripes, of which the middle one is very broad and often widened towards the antennal groove, while the lateral pair is occupying the lower half of the eye-margins or sometimes the entire margin and antennal groove, or rarely entirely disappeared, in the latter case a very small spot appears at the intero-inferior corner of each antennal groove. Back of the head very slightly convex, brown to blackish, with a broad margin lemon-yellow, this colour being gradually widened below to cheeks, the latter are narrow but rather conspicuously produced below and possess a rather distinct blackish brown spot just below the lower angle of eye, the spot sometimes connected with the lateral stripe of the face. All the bristles black, but the very short bristles of the occipital row brownish black. Antennae yellowish, with the apical joint blackish brown but in the paler specimens yellowish brown; 1st joint short, about  $\frac{1}{3}$  as long as wide; 2nd joint about twice as long as the basal joint or about  $1\frac{1}{2}$  times as long as wide, with the black middle bristle of moderate length; 3rd joint about  $3\frac{1}{3}$  times as long as wide, its tip rounded, in the male somewhat comparatively short; arista about as long as antenna, blackish, with the base pale yellowish. Palpi light yellow, rather broad, with the broad round tip, strongly curved upwards; proboscis blackish brown, its tip yellowish.

Thorax black, but the part below the lateral postsutural stripe and the front-upper border of the notopleural spot castaneous brown, with a very broad greyish-tomentose median stripe which in the anterior half is divided into two by a very fine longitudinal stripe and in the lower half also by a post-sutural stripe; on the disc there is also an indistinct greyish-tomentose stripe at each of the outer sides of median stripe, the former is interrupted at the suture and in the anterior half of the disc is somewhat triangularly shaped; humeral spot and 3 post-sutural stripes light lemon-yellow to orange-yellow, the latter about the same in width or in length and not reaching the posterior margin of the disc. Pleurae black, but the anterior part almost always reddish brown, the

spots being rather large and lemon-yellow to orange-yellow, but one on the sternopleuron comparatively small; mesophragma black, often with an indistinct narrow reddish brown median stripe. Scutellum light lemon-yellow to orange-yellow, with a small round black apical spot. All the bristles black; praescutellar bristles rather long and thick.

Abdomen light reddish yellow or orange-yellow; two basal segments with a pair of black triangular lateral spots which on the 1st tergite are large and often connected each other at the base; second tergite with a rather narrow, black transverse basal band which is not continued to the lateral spots and is often interrupted twice; third tergite with a rather broad black transverse band along the basal margin, never reaching the lateral margins; each of the 4th and 5th tergites with a black lateral spot, which on the 4th is subquadrate and on the 5th is longitudinal triangular, the both occupying nearly entire on the lateral margin of the respective tergite; in the middle a narrow black longitudinal stripe, from the basal margin of the 3rd tergite to the posterior margin of the 5th; bristles of the 3rd tergite in male black, of medium length; ovipositor somewhat depressed, its basal joint castaneous brown and longer than 5th and 6th tergites together, the latter being rather large and possessing a narrow black median stripe; the shining spots on the 5th tergite rounded, but very slightly narrowed outwards, of medium size. Ventral side orange-yellow or reddish orange-yellow, with the sternites (excepting the 2nd and 3rd or rarely also 4th) blackish.

Wings comparatively small, hyaline; stigma and  $R_1$  blackish brown, this colour extending the middle of the mouth of  $R_1$ , along the wing-margin and very slightly widened on  $r_{1+5}$ ; anal streak in colour or width about the same to costal band, but conspicuously narrowed towards the tip; the supernumerary lobe in male rather small, but the black shaggy hairs rather numerous and conspicuous.

Legs light yellow, with two pairs of posterior coxae, the posterior tibiae and the apical joints of posterior tarsi brown to dark brown, on the posterior side of the tip of the femora with a rather distinct brown to blackish brown oblong spot which on the posterior femora is almost

always expanded towards the anterior side but never forming an entire ring; the spur of middle tibiae very long and black.

Length: Body (without ovipositor) 5.7–6.5 mm (♂ ♀); wings 4.8–5.1 mm (♂ ♀).

Hab. Formosa—Suisharyo (X), Tainan (IV), Koshun (IV).

Types in the National Museum of Hungary, Budapest.

29. *Zeugodacus okunii*, sp. nov.

(Fig. 27; Pl. III, fig. 2)

Brownish yellow species of medium size; easily distinguished from other species of *Zeugodacus* by no facial nor fronto-orbital spots and uniformly light yellow legs.

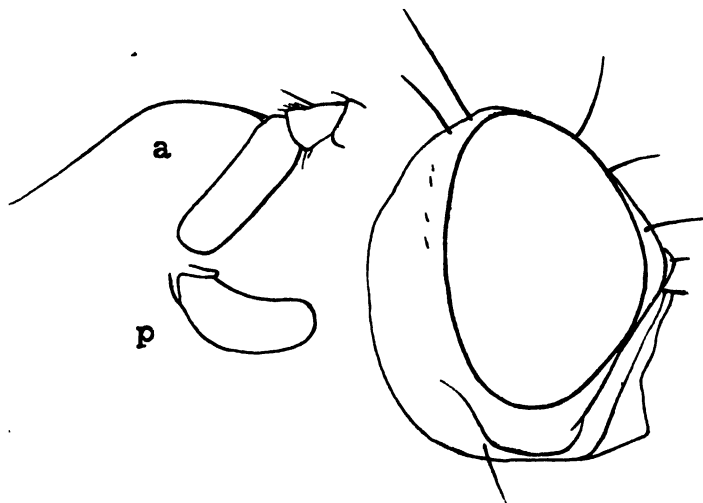


Fig. 27.

*Zeugodacus okunii*, ♀,  $\times$  ca 20. a, right antenna. p, right palpus.

♂ ♀. Frons distinctly narrower than eye, very slightly widened forwards, light yellow or light lemon-yellow, without any trace of lateral spots, but with a rather distinct oval light brown median spot which is sometimes disappeared; inferior fronto-orbital bristles only two pairs, or in some specimens asymmetrically 3, in the latter case the lower two standing very near to each other; lunula comparatively large, brown;

vertex with a small black ocellar triangle, from which to the upper angle of eyes there is an indistinct narrow pale reddish brown transverse streak. Face light waxy yellow; eye-margins of moderate width, slightly covered with whitish tomentum. Back of the head rather strongly convex, light waxy yellow, in the middle slightly reddish brown; cheeks of moderate size, light yellowish, with a very indistinct pale brownish spot just below the lower angle of eye. Antennae pale yellow, with pale reddish yellow 3rd joint, brown-tinged at tip; 1st joint comparatively large, about as long as wide; 2nd joint about  $1\frac{1}{2}$  times as long as wide or the first joint, strongly narrowed towards the base, with the rather short median seta; 3rd joint slightly curved upwards and gradually narrowed towards the tip at where it is rather broadly rounded, shorter than ( $\cup$ ) or as long as ( $\varphi$ ) three times its basal width, and about  $2\frac{1}{2}$  times as long as the 2nd joint; arista distinctly longer than antenna, blackish, with the base yellowish. Palpi light yellow, rather small, nearly parallel-sided with round tip, moderately curved upwards, in the female comparatively broad; proboscis pale yellowish brown. All the bristles black; occipital row yellowish and very weak.

Thorax reddish yellow to pale reddish brown, with one pair of very indistinct greyish-tomentose median stripes which are nearly disappearing on the posterior third of the disc, between these two stripes there is a very narrow and short black stripe in the anterior half of the disc, not reached the median postsutural stripe nor sometimes developed; on the disc two distinct black longitudinal stripes which are widely interrupted at the suture, their anterior portion triangularly shape and sometimes longitudinally divided into two spots by a narrow reddish yellow spot or stripe, and their posterior portion also triangular or rarely oblong, in the latter case a narrow black stripe appears along the side of median postsutural stripe and is fused with the broad oblong black stripe at the posterior part; at the posterior margin of the disc two triangular black spots, which are often fused each other along the margin; humeral and praesutural spots and three postsutural streaks light waxy yellow, the latter are very broad and appart rather far from the posterior margin of the disc, of which the median streak is a little longer than the lateral

one and is forwardly extending beyond the sutural line. Pleurae pale reddish yellow, with large light waxy yellow usual spots and with a short narrow black transverse stripe along the anterior margin of mesopleural spot; there are also 6 small black or dark castaneous spots—the round paler one behind the mesopleural spot, the narrowest and rather long one behind the notopleural spot, the distinct triangular one above the posterior coxa, two nearly continued spots just below the sternopleural spot and the remaining very large along the posterior margin of metapleural spot; mesophragma black with a broad light reddish yellow median stripe. Scutellum light waxy yellow, without the apical spot. All the bristles black and rather long.

Abdomen in colour as thorax; 1st tergite with very narrowly brown or black tinged lateral margins, this colour very often disappeared; 2nd tergite with one pair of round or triangular lateral spots and one median transverse band, the both being black and along the anterior margin; 3rd tergite with a entire, rather narrow, black basal band; each of the 4th and 5th tergites with one pair of transverse subquadrate black latero-basal spots; 3rd, 4th and 5th tergites with one distinct narrow continued black median stripe; 6th tergite in female not seen; the row of bristles on the 3rd tergite in male composing of only 6-9 rather long black bristles; ovipositor light yellow, its basal joint depressed and about as long as the 5th tergite. Ventral side almost always entirely orange-yellow, but in the female the sternites (except the 2nd one) blackish brown. Pubescence yellow.

Wings rather small, hyaline; stigma and  $R_1$  brown, this colour extending the middle of the mouth of  $R_5$  and suddenly widened at tip; anal streak narrow and pale brown, not striking one; tip of cu very indistinctly infuscated; the supernumerary lobe in male-wing rather large, the shaggy hairs very inconspicuous.

Legs uniformly light yellow; the spur of middle tibiae long and black.

Length: Body (without ovipositor) 6-7 mm. (♂ ♀); wings 5.5-6.5 mm.

Hab. Formosa—Kotosho (III, IV).

Types in the Entomological Museum of the Government Research Institute, Taihoku, Formosa.

### VIII. Genus **PARAZEUGODACUS**, nov.

This genus is easily distinguished from *Zeugodacus*, HENDEL, by the absence of the supernumerary lobe in male wing.

Frons narrower than eye, with 3 pairs of fronto-orbital bristles; face more or less knobbed in the middle; upper mouth-edge more or less reflexed; cheeks very short; 2nd joint of antennae not slender, with a distinct median seta. Thorax not slender, with two praescutellar, one anterior supra-alar and 4 scutellar bristles; pteropleural bristle conspicuous; sternopleural bristle wanting. Abdomen oval, in the male with a distinct ciliation of bristles of 3rd tergite; ovipositor with semi-depressed short basal joint.

Genotype: *Parazeugodacus matsumurai*, sp. nov.

Only one species found in Japan.

#### 30. *Parazeugodacus matsumurai*, sp. nov.

(Fig. 28; Pl. III, fig. 3)

Rather nearly allied to *bipustulatus*, BEZZI, but differing in the coloration of the face, the abdomen and the legs, as well as in other characters.

♂ ♀. Frons rather narrow, a little widened forwards, somewhat narrower than  $\frac{1}{4}$  the width of the head, pale yellowish brown but not uniformly, with the narrow margins light yellow; three pairs of brown lateral spots equidistant, of which the lower one is very small or very often inconspicuous and bears only one fronto-orbital bristle; in the middle with sometimes an ill-defined dark spot; ocellar triangle small, black; lunula dark brown, slightly shining; vertex without well-defined transversal band, but the posterior edge somewhat brownish. Face shining waxy yellow, with two black oval spots; eye-margins of moderate width, obscured by greyish tomentum, very slightly widened below; cheeks of moderate width, with one brownish subquadrate spot



just below the lower angle of eye. Back of the head slightly convex, shining, dark castaneous, with the eye-margins light yellow, this colour

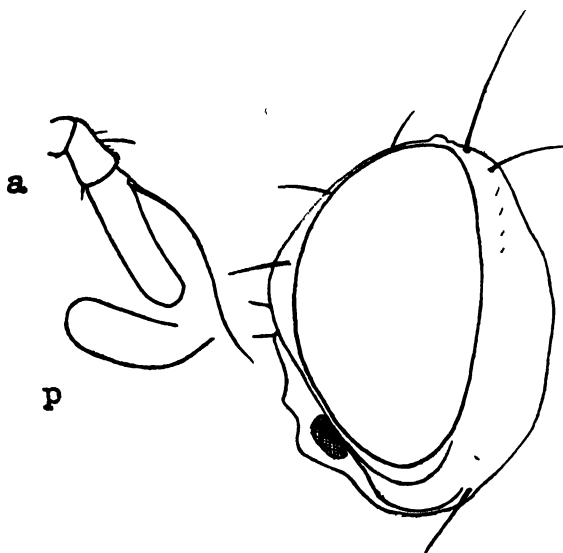


Fig. 28.

*Parazeugodacus matsumurai*, ♀,  $\times$  ca 20.

a, left antenna. p, left palpus.

becoming broad below to the cheeks. All the bristles black, rather short; occipital row rather conspicuous but very few. Antennae pale brown; 1st joint a little broader than long, yellowish; 2nd joint with tip yellowish, about twice as long as the basal joint or about  $1\frac{1}{2}$  times as long as wide, the median seta blackish and shorter than half the length of the second joint; 3rd joint long, about 4 (♀) or  $4\frac{1}{2}$  (♂)

times as long as wide, its tip rather narrowly rounded; arista about as long as the antenna, blackish, with the base pale yellowish. Palpi yellowish, rather large, gradually broadened toward the rounded tip; proboscis blackish brown.

Mesonotum black, covered by greyish tomentum, as well as by pale yellowish white pubescence, excepting of a rather narrow praesutural median stripe; in the front half there is very rarely a pair of narrow, somewhat oblique, reddish brown sub-lateral stripes; humeral and notopleural spots pale yellow, rather small; post-sutural lateral stripes very short and narrow, pale orange-yellow. Pleurae black, dull reddish brown towards the anterior part, the spots being conspicuous and orange-yellow, but the sterno-pleural spot wanting; mesophragma entirely black. Scutellum pale yellow, covered with pale yellowish white pubescence, with a broad black median stripe which becomes very broad forwards,

occupying on the whole width of the base of the disc. All the bristles long and black; humeral bristle wanting; apical scutellar bristles longer than scutellum, while the basal pair is a little shorter than the former.

Abdomen orange-yellow to reddish yellow, with the 1st tergite blackish; 2nd, 3rd and 4th tergites with a black transversal band along their basal margins, the band on the 4th being interrupted twice so that there is an isolate small median spot; 5th tergite with very rarely one very small black median dot; bristles-row of the 3rd tergite of male short, black and rather sparse; ovipositor very narrow, moderately depressed, reddish, its basal joint shorter than the 5th tergite, its 2nd joint as long as the preceding, and its 3rd joint a little shorter than the 2nd; the shining spots on the 5th tergite very large, nearly touching each other. Ventral surface (except the ovipositor) uniformly pale reddish yellow.

Wings of moderate size, very slightly infuscated, without any band or stripe, but the stigma and the tip (very narrowly) dark brown; r-m placed just after the middle of  $1M_2$ ;  $R_s$  comparatively broad; M rather large; the black shaggy hairs of the wings in male inconspicuous.

Legs yellow, with the hind tibiae and the four apical joints of tarsi brown, sometimes the fore and middle tibiae also brownish; the spur of middle tibiae black and strong.

Length: Body (without ovipositor) 6-7 mm (♂♂); wings 6-6.6 mm (♂♂).

Hab. Japan—Ogasawara (VIII), collected by Prof. S. MATSUMURA.

Types in the Entomological Museum of the Government Research Institute, Taihoku, Formosa.

#### IX. Genus **PARATRIDACUS**, nov.

This genus is easily distinguished from *Tridacus* BEZZI by the well developed praescutellar bristles; from *Tetradacus* MIYAKE by the well developed praescutellar bristles, the absence of the bristle-row of the 3rd abdominal tergite in male, the 4 scutellar bristles and the normally developed basal joint of ovipositor; from *Chaetodacus* and *Zeugodacus* by the absence of the supernumerary lobe or the black shaggy hairs in the

male wings; from *Parazeugodacus* by no ciliation of bristles of the 3rd tergite in male.

Genotype: *Dacus yayeyamanus*, MATSUMURA.

At the present only one species from Japan.

### 31. *Paratridacus yayeyamanus*, MATSUMURA.

(Fig. 29; Pl. III, fig. 4)

Thous. Ins. Jap. Addit. II., p. 412, Pl. XXIII, fig. 10 (1916).

A rather large, pale yellowish brown species, distinguished by the narrow frons, the distinctly elongated antennae, only two yellow longitudinal postsutural stripes, the broad brown costal band of wing, and the short depressed basal joint of ovipositor; allied to the indian *garciniae*, BEZZI, but distinctly differs in several characters.

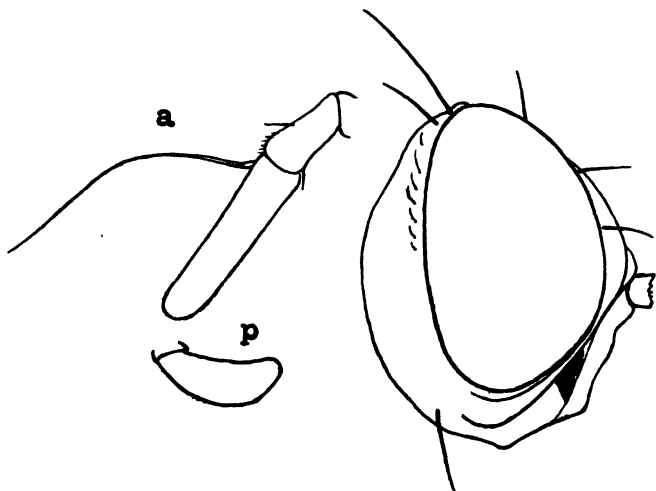


Fig. 29.

*Paratridacus yayeyamanus*, ♂, × ca. 20. a, right antenna. p, right palpus.

♂ ♀. Frons comparatively narrow, about  $\frac{1}{4}$  as wide as head, very slightly broadened forwards, yellow, with 3 pairs of minute equidistant brown or blackish lateral spots, from each of which only one rather weak fronto-orbital bristle stands, the middle pair being almost always very small or very often disappeared, and the upper pair mostly conspicuous and almost always present; in the middle there is also one

rather large dark brown spot ; lunula large, blackish brown ; vertex with a small black ocellar triangle, the transverse band almost always not developed, when present it is very narrow and yellowish brown and almost always distinctly interrupted at the ocellar triangle. Face comparatively broad, with a distinct central knob just below the antennal base, light waxy yellow, with two distinct subquadrate black spots, each in the middle of the rather broad antennal groove, but their intero-inferior corner extending the upper mouth-edge which is slightly reflexed ; eye-margins rather broad, slightly widened below, their interior margin distinctly tinged with blackish brown, this colour commencing from the lunula. Back of the head rather slightly convex, nearly uniformly yellowish, with a narrow paler margin which is conspicuously widened below to the cheeks ; cheeks of moderate size, with an indistinct brown spot between the lower mouth-edge and the lower angle of eye, this spot being very often divided into two (upper and lower). All the bristles black ; occipital row rather conspicuous. Antennae yellowish brown, with the apical joint blackish, very long ; 1st joint narrow and long, about  $1\frac{1}{2}$  times as long as wide ; 2nd joint comparatively very long, about twice as long as the basal joint or about  $2\frac{1}{2}$  times as long as wide, the median seta conspicuous and black ; 3rd joint about 4 (♀) or  $4\frac{1}{2}$  (♂) times as long as wide, or longer than twice the preceding one, nearly parallel-sided with the round tip ; arista shorter than the antenna. Palpi light yellow, rather short, strongly curved upwards, with the narrowly rounded tip ; proboscis brown.

Mesonotum reddish yellow or light reddish brown, with a broad greyish-tomentose median longitudinal streak which becomes broader hindwards and is separated into two stripes by a very fine median dark line, the latter being suddenly and strongly widened in the middle of the postsutural portion of the disc and not reached the posterior margin ; along the whole length of the outer margins of the median greyish streak there is a rather broad black streak, which is outwardly curved behind at where it is united with the lateral black streak, this streak running along the interior margin of yellowish lateral postsutural streak and not extending forwards to the suture ; just below the humeral callus

there is one large subquadrate or sometimes subtriangular blackish spot, which is always isolated from the black streaks already mentioned and is not reaching the suture ; humeral spot rather small, postsutural lateral streaks rather broad and conspicuously curved inwards at the anterior part, the both being yellowish white or pale orange-yellow ; no prae-sutural spot nor median postsutural streak. Pleurae paler than the notum, with the rather large yellowish white or pale orange-yellow meso-, sterno- and meta-pleural spots ; the front margin of mesopleural spot, the lower margin of sterno- and meta-pleural spots, and an area between the meso- and meta-pleural spots more or less blackish ; mesophragma black, with a rather broad, yellowish median longitudinal stripe. Scutellum uniformly yellowish white pale orange-yellow. All the bristles black ; praescutellar bristles long, but shorter than the apical scutellar one.

Abdomen broader than thorax as in usual, pale reddish orange-yellow ; 1st tergite with rather broadly blackish-tinged lateral margins and one small brown longitudinal median spot, the latter often disappeared ; 2nd tergite also with the blackish lateral margins, at the anterior margin there is one (or very rarely three) small round blackish or brownish spot which is sometimes united with the median spot of the basal tergite ; each of the 3rd, 4th and 5th tergites with one pair of triangular black lateral spots and one similar coloured median longitudinal stripe, the latter never interrupted at the sutures ; bristle-row of the 3rd tergite in male never present ; ovipositor very short, yellowish brown, its basal joint conspicuously depressed and distinctly shorter than the 5th tergite. Ventral surface pale yellow, with the sternites dark castaneous, very often with the posterior margin of each sternite yellowish.

Wings rather small, gradually narrowed towards the apex, somewhat brownish but the basal half clear ; stigma blackish ;  $R_1$  and  $R_2$  dark brown, but the posterior half of the latter more or less yellowish, this dark brown colour extending a little beyond the tip of  $r_{4+5}$  along the wing margin and moderately broadened at the wing-tip ; anal streak dark brown, narrower than the costal band and in both sexes not

reaching the wing margin; the supernumerary lobe and the black shaggy hairs of male wings never developed.

Legs bright yellow, two pairs of posterior coxae and trochanters, hind tibiae and apical joints of tarsi blackish brown; one very indistinct small spot on the outer side near the tip of front tibiae brownish; on the under side of the apical part of the middle and hind femora there is also one distinct oblong shining black spot; the spur of middle tibiae black, conspicuously long, thick and strongly curved.

Length: Body (without ovipositor) 6-9 mm ( $\delta$  ♀); wings 5.5-8 mm ( $\delta$  ♀).

Hab. Japan—Yayeyama (Taketomi IX).

Host—*Cucurbita moschata*, DUCHESNE.

Type in the Entomological Museum of the Hokkaido Imperial University, Sapporo, Japan.

## X. Genus **TETRADACUS**, MIYAKE.

Bull. Imp. Cent. Agr. Exp. St. Japan, II., no. 2, p. 92 (1919).

Rather large species. Frons broad, about  $\frac{1}{3}$  as wide as head, with two fronto-orbital bristles; face without central knob; upper mouth-edge never reflexed; antennae rather slender, with long 2nd joint which has no distinct median seta. Thorax with two anterior supra-alar bristles and only two apical scutellar bristles, without sterno- and ptero-pleural bristles. Abdomen rather narrow, in the male with a ciliation of bristles of 3rd tergite; ovipositor with bottle-shaped basal joint.

Genotype: *Tetradacus tsuneonis*, MIYAKE.

### 32. *Tetradacus tsuneonis*, MIYAKE

Bull. Imp. Cent. Agr. Exp. St. Japan, II, no. 2, p. 92, pl. II,  
fig. 1, pl. X, fig. 1 (1919).

*Dacus ferrugineus*, KUWANA (nec. FABR.), Ins. World, Jap. XIV., p. 23.

*Dacus ferrugineus*, KUWANA (nec. FABR.), Report Imp. Agr. Exp. St. Tokyo.  
XXXVIII., p. 109, fig. 2 (1911).

A large, orange-yellow to reddish yellow species, distinguished by the non-spotted broad frons, the broad yellow costal band of wings and

the narrow black abdominal median stripe which extends from the base to the anal apex.

♂ ♀. Frons broad, distinctly widened forwards, a little broader than eye, yellow to orange-yellow, often somewhat brownish in the middle, without the lateral spots or with very rarely two pairs of very small blackish spots, from which arise the inferior fronto-orbital bristles, lunula rather large, brownish or rarely waxy yellowish; vertex with the small black ocellar triangle. Face broad, nearly straight in profile, its lower half of the middle portion distinctly transversely rugulose, light waxy yellow, with one oblong black spot at the lower interior corner of each antennal groove; on the upper mouth edge there is often a small longitudinal brown median spot; eye-margins rather broad, nearly the same width throughout the whole length, slightly greyish dusted. Back of the head rather conspicuously convex, light yellow; cheeks rather long, with a distinct small subtriangular black spot just below the lower angle of the eye. All the bristles black; fronto-orbital bristles 3; occipital row very weak. Antennae narrow, yellow to orange-yellow; 1st joint longer than wide; second joint distinctly widened towards its apex, about twice as long as wide or the basal joint; 3rd joint gradually narrowed towards its tip, about twice as long as the preceding one or about 4 (♂ ♀) times as long as wide; arista blackish, with the base yellowish, about as long as antenna. Palpi rather short, strongly curved upwards with rather broadly rounded tip, in the female comparatively broader than in the male; proboscis rather narrow, brown.

Mesonotum reddish brown to yellowish ferrugineous, with two greyish tomentose median stripes, between these stripes there is a narrow blackish brown longitudinal median stripe, the latter bifurcate in its posterior half along the yellow median post-sutural stripe; along the outer margins of the greyish tomentose median stripes there is a very fine rather indistinct blackish brown longitudinal line which is posteriorly united with the branches of the median blackish stripe just before the posterior margin of the disc; the suture and the interior margins of the humeral calli very narrowly tinged with blackish colour; humeral calli, one rather narrow spot just behind the humeral calli, and strongly

curved rather narrow lateral postsutural streaks yellowish; notopleural spot brownish. Pleurae slightly paler than notum, with 3 very large yellowish spots (meso-, sterno- and meta-pleural); mesophragma reddish orange-yellow to light reddish brown, very often with narrow black longitudinal median and lateral lines. Scutellum yellowish, comparatively small. Pubescence yellowish; bristles black.

Abdomen rather narrow, not broader than thorax, paler than thorax, somewhat brownish towards the anal end, with one distinct but narrow black or blackish brown longitudinal median stripe which extends from the base to the anal end or does sometimes somewhat notch at the base of each tergite; on the 3rd tergite there is also a narrow brown or castaneous basal band which is very often interrupted in the middle; each of the 4th and 5th tergites with one narrow reddish brown transverse-lateral band along their anterior margin; the shining portions of the 5th tergite large, subtriangular in male or transverse-oblong in female; bristle-row of the 3rd tergite in male black, of moderate length; ovipositor light reddish brown, its basal joint as long as the 4th and 5th tergites together. Ventral surface orange-yellow, often somewhat brownish towards the anal end. Pubescence yellowish.

Wings narrow, hyaline, more or less greyish; veins dark brown; stigma and ill-defined apical spot dark brown, this colour continues to a very narrow dark brown stripe along the costal margin of  $R_1$ ;  $R_1$ ,  $R_2$  and the anal streak yellow. Legs yellow to orange-yellow or sometimes light brownish yellow; the tip of the femora, the both ends of tibiae and the apical joints of tarsi very often brownish; middle tibiae distinctly furrowed and bordered with blackish brown colour in the apical half of their lower side; front and hind tibiae with such a furrow which is however about one-third as long as the middle one; on the interior side of the end of the femora and also of the tibiae there is sometimes one testaceous streak; the spur of the middle tibiae black, rather short.

Length: Body (without ovipositor) 10–11 mm; wings 9–9.5 mm.

Host: *Citrus kinokuni*, HOST.

Hab. Japan—Nagasaki-ken (Hirado); Fukuoka-ken (Yame); Kuma-



moto-ken (Kawachi, Obama); Oita-ken (Aoye, Shitaura, Hiji-ro, Usuki, Meiji, Higashi Kamiura, Nishi Kamiura, Yawata, Tsukumi); Miyasaki-ken (Takaoka, Aya, Mino, Kamihokita, Nobeoka, Okatomi, Tsunetomi, Minami-kata, Kita-kata, Ikata, Kadokawa, Nanaori, Honjo, Toi); Kagoshima-ken (Sakurajima, Nishisakurajima, Take, Fujino, Fukuyama, Yamada).

Types are not preserved.

#### XI. Genus **MELLESIS**, BEZZI.

Bull. Ent. Research, VII., p. 114 (1916).

Allied to *Monacrostichus* BEZZI, but differs in interrupted suture of mesonotum, non spinous anterior femora and non-sinuate second section of m.

Genotype: *Monacrostichus crabroniformis*, BEZZI.

The genus differs from *Tetradacus* MIYAKE in the following characters: Antennae much longer than face; first antennal joint as long as the second. Praescutellar bristles wanting; anterior supra-alar bristles usually present, or sometimes wanting. Abdomen club-shaped. Wings without the supernumerary lobe in the male.

Head rather short; frons flat, parallel-sided or very slightly widened forwards, with two inferior fronto-orbital bristles or very rarely wanting them; lunula broad, well-developed; face shorter than frons, in the middle much shorter than the antennal grooves, which are sometimes twice as long as the median length of the face; antennae much longer than face, carried far apart from it, its first joint elongate and as long as second, and its second joint without median seta. Mesonotum short, the suture interrupted, with one anterior supra-alar bristle and without praescutellar bristles, the former very rarely wanted, the acrostichal bristles wanting or present; scutellum very short, transverse, with only two apical bristles. Abdomen well club-shaped, strongly convex above and strongly concave beneath; first tergite very narrow and cylindrical or subcylindrical; 3rd tergite in male with a distinct ciliation of bristles;

basal joint of ovipositor swollen, its basal half concealed very deeply beneath the rounded hind border of the last abdominal tergite. Femora not spined beneath. Wings distinctly shorter than body, without cross band, in the male without supernumerary lobe and black shaggy hairs; stigma long and pointed; anal cell with a very long and narrow posterior prolongation.

The flies belonging to this genus are rather uniform in facies and wing-pattern; they have a was-like appearance and seem to mimic certain Hymenoptera of the subfamily *Crabroninae* and *Eumeninae*. Only one species found in Formosa.

### 33. *Mellesis apicalis*, sp. nov.

(Fig. 30; Pl. XIV, fig. 5)

Very near to *Mellesis subsessilis* and *nummularia*, BEZZI, but at once distinguished from the former by the wing-pattern, the well curved  $r_{4+5}$ , and the brown posterior tibiae; from the latter by the short anal cell of wings, the coloration etc.

♂ ♀. Head a little narrower than thorax, about half as long as wide; frons ochraceous, but just behind the lunula almost always yellow, nearly as wide as eye, very slightly widened forwards, in the middle very slightly convex, with an ill-defined round blackish brown median patch which is nearly wanting in paler specimens, near the margins with two pairs of small blackish orbital dots which lack also in paler specimens; the median patch covered with rather numerous erect black pubescence; the hind half of the frons furnished with some upwardly sloping white pubescence and dusted with a silvery white tomentum; vertex not keeled, with a small blackish ocellar dot; vertical calli very flat and rather indistinct; lunula very broad, shining dark castaneous; face short and broad, in profile nearly straight but in the middle and at the upper mouth-edge very slightly convex, shining yellow, with a large black spot on inner apical side of each antennal groove; back of the head slightly and nearly evenly swollen, yellowish brown, with a broad yellow margin; cheeks a little broader than the

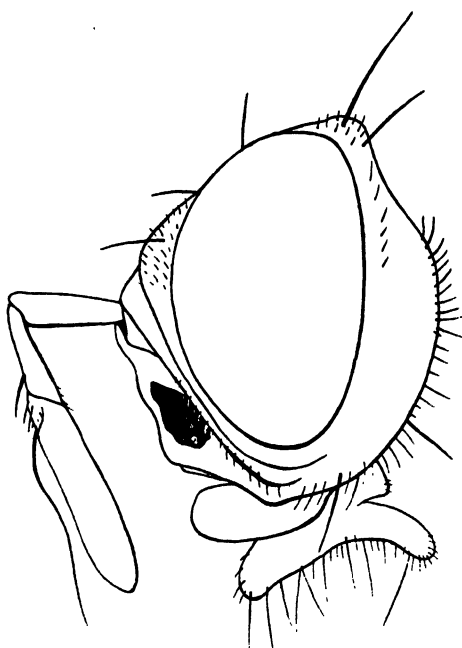


Fig. 30.

*Mellesis apicalis*, ♀ × ca 23.

breadth of third antennal joint, with a distinct genal groove. Antennae slender, about twice as long as face, yellowish brown, with the 3rd joint blackish; first joint long and slender, as long as the second, cylindrical, inconspicuously broadened toward its tip, at where there are some short black bristly hairs; second joint about as broad as the first but rather strongly but gradually narrowed toward its base, furnished with many short black bristly hairs nearly all over the surface excepting the outer side; third joint shorter than two basal joints together, narrow, strongly depressed laterally, very slightly narrowed toward its blunt apex; arista black, its base pale, shorter than the 2nd and 3rd joints together. Palpi pale orange-yellow; proboscis dark brown. All the bristles black; fronto-orbital bristles 1:2, all similar in length; postvertical bristle wanting; vertical bristles very strong, their inner pair very slightly longer than their outer pair; genal bristle well-developed.

Thorax a little longer than wide, broadest behind the suture, rather convex above; mesonotum furnished with very numerous minute granules and covered with dense yellowish pubescence, reddish brown, with two pairs of ill-defined blackish patches, of which the anterior pair is transverse along the fore margin of the broadly interrupted yellow sutural band, and the posterior pair is oblong on the outside of the short yellow median stripe; in the middle of the disc there is a pair of white tomentose stripes, which are rather broad and do not extend the

posterior margin ; humeral and notopleural calli yellow ; pleurae granulate and pubescent as in mesonotum but the anterior half smooth and blackish-pubescent, with a large yellow mesopleural band which continues to a rather small yellow spot on the upper border of the sternopleuron, and with a large yellow double hypopleural spot ; mesophragma and metanotum entirely reddish brown, greyish tomentose ; scutellum small, conspicuously transverse, granulate and pubescent like mesonotum, yellow, with a very narrow brown basal stripe. All the bristles black ; scapular bristles conspicuous, even those of middle pair ; anterior supra-alar bristle much shorter than the posterior pair ; praescutellar bristle wanting ; pteropleural bristle finer than mesopleural ; notopleural bristles strong ; scutellar bristles only two apicals. Halteres whitish yellow.

Abdomen rather elongate, convex above and strongly concave beneath, more or less stalked at the base and clubbed towards the anal apex, granulate and pubescent like mesonotum, but the lateral margins of 1st and second tergites furnished with somewhat long erect whitish hairs ; first tergite moderately restricted and semicylindrical, very slightly longer than wide, the prominent basal tubercles being very well developed, reddish brown, with an ill-defined isolated blackish median stripe, 2nd tergite strongly widened hindwards, pale yellow, near the basal margin there is an undulate blackish band which becomes broad outwards and reaches the lateral margins of disc, the blackish median stripe extending from this band to near the hind margin of disc ; 3rd, 4th and 5th tergites reddish brown, more or less darkened toward the sides, with an entire black median stripe ; on the former with a pair of ill-defined blackish basal spots, and on the latter with a pair of very large shining patches ; sixth tergite invisible ; bristle-ciliation of the 3rd tergite of male composed of a few long blackish bristle-like hairs ; ovipositor yellowish brown, the basal joint elongated conical, not much protruded hindwards, the second joint paler than the preceding one, very narrow and about half as long as the latter. Ventre paler than dorsum.

Wings shorter than body, shining and iridescent, with dark brown veins ;  $r_{2+3}$  straight ;  $r_{4+5}$  rather strongly curved in the second portion,

and parallel with the last portion of m, but the mouth of  $R_3$  being suddenly widened;  $M_1$  comparatively small; stigma as long as the second costal cell; posterior prolongation of the anal cell very long and narrow, longer than the main portion of the cell but not extending very near to the wing-margin. The pattern as in *nummularia* BEZZI, consisting of a yellowish brown broad complete costal border, comprising even costal cells and extending below to  $r_{4+5}$ , at the apex there is a large rounded black spot, which extends below beyond m but not inwardly reaches to the upper end of m-cu and is rather separated from wing border leaving a narrow subhyaline apical portion in  $R_3$ ; costal cells pale yellow; stigma dark yellow;  $R_1$  darkened toward the costa; R dark at the base just below the second costal cell; anal stripe narrow, yellowish, but blackish on the apical half.

Legs pale yellowish; posterior tibiae and 4 apical joints of tarsi blackish; two pairs of anterior tibiae more or less brown especially toward the base blackish; middle femora with an ill-defined long apical blackish stripe beneath; metatarsi whitish.

Length: Body 8.5–9 mm ( $\delta$  ♀); wings 6–7 mm ( $\delta$  ♀).

Hab. Formosa—Koshun (Shijyukei, VIII).

Types in the Entomological Museum of Government Research Institute, Taihoku, Formosa.

### Subfamily TRYPETINAE, HENDEL.

LINDNER, Fliegen Palaearkt. Region, 49: Trypetidae, p. 17 (1927).

*Trypaneinae* (*Ceratitinae*+*Myiopitinae*), BEZZI, Indian Trypaneids, p. 86 (1913).

*Ceratitina* (p. p.)+*Tephritina* (p. p.), HENDEL, Die Bohrfliegen Sudamerikas, pp. 4, 5 (1913).

*Ceratitinae*+*Myiopitinae*, EFFLATOUN, A monograph of Egyptian Diptera, p. 18 (1924).

*Ceratitinae*, BEZZI, South Afr. Trypaneid Diptera (Ann. S. Af. Mus. XIX., 3) (1924).

It is distinguished from *Dacinae* by the well-developed chaetotaxy of head and thorax, as well as by the less chitinised body. Very much varies in colour of body and wings, mostly very small species.

Head usually narrower than or rarely broader than the thorax, not depressed nor compressed, rather globular; antennae usually shorter than the face and pendant, never porrect, with a mostly pubescent or plumose arista. The chaetotaxy of head and thorax: Ocellar and post-vertical bristles mostly present, strong or weak; occipital row more or less developed, never wanting, always weak and blackish or very rarely yellowish, never thick nor blunt; humeral, praesutural and anterior supra-alar bristles present and rather strong, but the former two very rarely wanting; praescutellar and dorsocentral bristles always present; sternopleural bristle almost always present; pteropleural bristle strong, never wanting; scutellar bristles 2 or rarely 3 pairs, or very rarely one pair of basal bristles. Abdomen narrow or broad, usually convex on the dorsum, in the female with the distinct 6th tergite which is always shorter than the 5th, and the others never fused together. Wings narrow to broad, banded or hyaline spotted, never reticulated, or rarely no marking; auxiliary vein distinct, the first three longitudinal veins not approximated; second basal cell (M) not dilated; anal cell not narrowed, with the inferior angle drawn out into a point or not so, as long as or shorter or longer than the cell M. Legs with the front femora usually bristled below, but rarely bare.

The species are found from tropical to cold countries; the larvae live in fruits, or in various parts of vegetables, and are often gall-makers.

The key for the Genera found in the Japanese-Empire.

- A. Anal cross-vein (cu-a) concave or inwardly angulate; superior fronto-orbital bristles almost always two pairs.....Tribe *Trypetini*, HENDEL.
1.  $r_{4+5}$  bearing bristles throughout its length, or at least from the base to the small cross-vein (r-m)<sup>(5)</sup>.
  2. Praesutural bristles present.
    3. Scutellum with four bristles.
      4. Propleural bristles not distinct.
        5. Hind femora not spinulose beneath<sup>(6)</sup>.

(5) In *Trypeta luteonotata*, m, the bristles are prominent only at the extreme base of  $r_{4+5}$ .

(6) In the genus *Poecilotheca*, HENDEL, the hind femora with one row of spine-like bristles, but no propleural bristle.

6. Middle tibiae with a single spur.
  7. Wings with black streaks towards the base.
    8. Arista plumose.
      9. Back of the head distinctly swollen laterally; r-m after the middle of  $1M_2$ . Blackish species.
      10. 3rd antennal joint pointed at the tip; the upper rays of arista distinctly longer than the unders.....*Proanoplomus*, nov.
      - 10 10. 3rd antennal joint rounded at the tip; the rays of arista in both sides equal length.....*Paranoplomus*, nov.
    99. Back of the head normal; r-m in the middle of  $1M_2$ ; 3rd antennal joint pointed at the tip. Yellow species.....*Acroceratitis*, HENDEL.
  88. Arista pubescent; 3rd antennal joint triangular; r-m in the middle of  $1M_2$ .....*Paratrithrum*, nov.
77. Wings without black streaks towards the base.
    8. Arista plumose.
      9. Ocellar bristles present.
        10. 3rd antennal joint rounded at the tip.
          11. Ocellar bristles very strong .....*Taeniostola*, BEZZI.
          - 11 11. Ocellar bristles rudiment. ....*Gastrozona*, BEZZI.
        - 10 10. 3rd antennal joint pointed at the tip; ocellar bristles strong.....*Acrotaeniostola*, HENDEL.
      99. Ocellar bristles wanting; postvertical bristles present; lower fronto-orbital bristles 6 .....*Carpophthorella*, HENDEL.
    88. Arista pubescent.
      9. r-m distinctly after the middle of  $1M_2$ .
      10. Wings broad, distinctly shorter than 3 times the width.
        11. Wings normal, without a peculiar tail-like supernumerary lobe.
        12. Subcostal vein oblique at the apical part, so that the stigma is distinctly pointed at the tip; even it is nearly perpendicular the posterior cross-vein (m-cu) is not very oblique (almost always perpendicular with m).

13. Ocellar bristles shorter than fronto-orbital bristles; eyes moderate in size; back of the head slightly convex below.
14. Antennae inserted distinctly below the middle of eyes which are strongly concave at the posterior margin .....  
.....*Calosphenisca*, HENDEL,
- 14 14. Antennae insterted in the middle of eyes which are slightly convex at the posterior margin.
15. Frons about twice or 2½ times as long as wide, or narrower than or as wide as the eye.
16. Antennae inserted in the middle of eyes; back of the head flattened, not strongly swollen on the lower half; ocellar bristles strong.....  
..... *Pseudospheniscus*,  
HENDEL.<sup>(7)</sup>
- 16 16. Antennae inserted just below the middle of eyes; back of the head strongly swollen on the lower half; ocellar bristles very minute.....  
..... *Prospheniscus*, nov.
- 15 15. Frons about 1½ times as long as wide, or broader than eye; rather brownish .....*Neanomoea*, HENDEL.

(7) *Pseud. inflatus* SHIRAKI has back of the head distinctly swollen as in the genus *Philophylla*, ROND., but its stigma is very short as in *Pseudospheniscus*.



- 13 13. Ocellar bristles longer than fronto-orbital bristles; eyes small; back of the head strongly convex below; frons distinctly broader than eye.....*Paragastrozona*, nov.
- 12 12. Subcostal vein right angle at the tip with wing-margin; m-cu strongly oblique, so that the superior angle is distinctly obtuse.....  
..... *Phagocarpus*, RONDANI.
- 11 11. Wings with a peculiarly pointed super-  
numerary lobe..... *Machaomyia*, HENDEL.
- 10 10. Wings narrow, about 3 times as long as wide, the anterior half nearly entirely black.
11. Stigma moderate in length; cheeks not very long produced below.....  
..... *Hemilea*, LOEW.
- 11 11. Stigma very long, as long as the whole length of costal cell; cheeks long-produced below .....*Parahypnidium*, nov.
99. r-m in the middle of 1M<sub>2</sub>.
10. Inferior fronto-orbital bristles 3 or more; scutellum flattened on the dorsum; wings with blackish entire transverse bands .....  
..... *Staurella*, BEZZI.
- 10 10. Inferior fronto-orbital bristles only 2; scutellum swollen on the dorsum; wings without blackish entire transverse band .....  
.....*Poecilotheca*, HENDEL.
66. Middle tibiae with two spurs .....*Spilocosmia*, BEZZI.
55. Hind femora spinulose beneath.....*Poecilotheca*, HENDEL.
44. Propleural bristles distinct.
5. Hind femora not spined beneath.
6. Body normal; middle tibiae with only one spur.
7. Ocellar bristles distinct.
8. Sternopleural bristles well-developed; prothorax with or without row of black bristle-like hairs.
9. Prothorax with a row of bristle-like hairs.
10. Ovipositor very long, about as long as body, cylindrical .....*Anastrephoides*, HENDEL.

- 10 10. Ovipositor short, mostly depressed.
11. r-m distinctly after the middle of  $IM_2$ .
12. Fronto-orbital bristles 2 : 4; frons strongly concave at the anterior area, and with distinctly elevated lateral margins..... *Paramyiolia*, nov.
- 12 12. Fronto-orbital bristles 2 : 3; face conspicuously longer than frons, the latter swollen above; vibrissal-edge very inconspicuously hairy .....  
..... *Magnimyiolia*, nov.
- 11 11. r-m at the middle of  $1M_2$ ; face and frons normal ..... *Trypeta*, MEIGEN.
99. Prothorax without bristle-row; fronto-orbital bristles mostly 2 : 3; face as long as frons, the latter being flat or partly convex; vibrissal-edge distinctly bristled..... *Myiolia*, RONDANI.
88. Sternopleural bristles wanting or presenting; prothorax with a distinct row of black bristle-like hairs.  
..... *Acidia*, ROBINEAU-DESVOIDY.
77. Ocellar bristles wanting.
8. Lunula normal; first antennal joint very short .....  
..... *Vidalia*, ROBINEAU-DESVOIDY.
88. Lunula strongly sunk; first antennal joint long, longer than wide ..... *Moritsugia*, nov.
66. Body conspicuously elongate; middle tibiae with 3 spurs.....  
..... *Phantasmella*, HENDEL.
55. Hind femora spined beneath; middle tibiae with two spurs; body normal ..... *Callistomyia*, BEZZI.
33. Scutellum with 6 bristles
4. Supra-alar bristles three.
5. Middle tibiae with a single spur; bristles of occipital row black.
6. Arista plumose.
7.  $r_{2+3}$  distinctly waved; inferior fronto-orbital bristles one pair ..... *Acanthoneura*, MACQUART.
77.  $r_{2+3}$  straight; inferior fronto-orbital bristles two pairs.
8. Eyes rounded ..... *Rioxoptilona*, HENDEL.
88. Eyes narrow and high ..... *Diarrhegma*, BEZZI.
66. Arista pubescent.
7. Ocellar bristles strong; wings very broad, with nearly all of veins straight, blackish and with numerous hyaline

- spots; anal cell drawn out into a very long pointed lower angle which is as long as the rest.....*Hexacinia*, HENDEL.
77. Ocellar bristles wanting; wings very narrow, with  $r_{4+5}$  and  $m$  more or less waved; anal cell drawn out into a very short pointed angle, hyaline with a few large black spots .....*Phorelliosoma*, HENDEL.
55. Middle tibiae with two spurs; arista plumose; bristles of occipital row yellowish but pointed; ocellar bristles wanted; wings with yellowish brown oblique bands .....*Sophia*, WALKER.
44. Supra-alar bristles 4; bristles of occipital row black; ocellar bristles very strong; arista distinctly pubescent; middle tibiae with two long spurs;  $r_{2+3}$  straight; fronto-orbital bristles 2 : 3.....*Ortalotrypeta*, HENDEL.
22. Praesutural and ocellar bristles wanted; arista plumose.
3. Inferior fronto-orbital bristles two or three pairs.....*Ptilona*, V. D. WULP.
33. Inferior fronto-orbital bristles only one pair .....*Euphranta*, LOEW.
11.  $r_{4+5}$  bearing no bristles, very rarely a few indistinct bristles at the base.
2. Scutellum with 4 bristles;  $r-m$  distinctly after the middle of  $1M_2$ .
3. Ocellar bristles distinctly present; all the bristles black.
4. Frons very broad, distinctly broader than the eye.
5. Bristles of occipital row yellowish, but distinctly pointed; ocellar bristles 2; fronto-orbital bristles 2 : 3; thorax covered with numerous short oristle-like hairs;  $r_{4+5}$  not bristled .....*Oedaspis*, LOEW.
55. Bristles of occipital row black; ocellar bristles 4; fronto-orbital 2 : 4; thorax covered with fine hairs;  $r_{4+5}$  sometimes very indistinctly bristled only at the base .....*Tetramyolia*, nov.
44. Frons as wide as the eye; ocellar bristles 2; fronto-orbital bristles 2 : 2;  $r_{4+5}$  without bristles throughout the whole length. ....*Spheniscomyia*, BEZZI.
33. Ocellar bristles wanting; frons about as wide as the eye; all the bristles yellow; fronto-orbital bristles 2 : 2;  $r_{4+5}$  not bristly .....*Acidioxantha*, HENDEL.
22. Scutellum with only basal pair of bristles;  $r-m$  after the middle of  $1M_2$ ; anal cross-vein (cu-a) nearly straight, the lower angle of anal cell being nearly right angle. ....*Oxyaciura*, HENDEL.
- B. Anal cross-vein (cu-a) straight or convex; the lower angle of anal cell never produced; superior fronto-orbital bristles almost always one pair.....  
.....*Tribe Euribiini*, HENDEL.
1. Proboscis normal;  $r_{4+5}$  with  $m$  distinctly divergent;  $r-m$  distinctly before the

- middle of  $1M_2$ ; cu-a strongly oblique, the superior angle being sharply pointed; wings not banded.....*Okuniomyia*, nov.
11. Proboscis narrow and elongate;  $r_{4+5}$  with m parallel; r-m distinctly after the middle of  $1M_2$ ; cu-a perpendicular; wings banded .....*Euribia*, MEIGEN.

## XII. Genus **PROANOPLOMUS**, nov.

Closely allied to *Anoplomus*, BEZZI, but differs from that in the following points:

Eyes when seen from side not very narrow, about twice as long as wide; the anterior margin convex; the posterior margin somewhat obtuse-angulate; the upper angle strongly rounded; the lower angle somewhat pointed. Antennae inserted in the middle of the eyes. Fronto-orbital bristles 2:3; ocellar bristles strong, about as long as superior fronto-orbital bristles; bristles of the occipital row distinct and rather strong; vibrissal-edges distinctly bristled, but the bristles not strong; genal bristle one and very strong; humeral bristle strong; dorso-central bristles distinctly before the middle between the suture and the base of scutellum; mesopleural bristles 2; apical pair of scutellar bristles not stronger than the basal pair, not divergent but crossing (this character may be not constant). Ovipositor (in the rest) distinctly shorter than the abdomen, distinctly flattened. Middle tibiae with only one strong spur.

Easily distinguished from any other our genera of the subfamily by the lateral swellings of back of the head. Head a little higher than broad. Face flattened but in the middle swollen, when seen from side nearly straight, with the upper mouth-edge very little reflexed; antennal grooves narrow but very deep, hardly reaching the lower mouth-edge; cheeks moderately broad; the lateral swellings of hind head easily seen from the front; 3rd joint of antennae with somewhat pointed tip; arista moderately plumose, the rays of upper margin being longer than those of the under margin; vertical bristles two pairs, the inner pair very strong and the outer one shorter; postvertical bristles rather weak, shorter than the outer pair of vertical bristles. Thoracic chaetotaxy complete; pteropleural bristle comparatively long and strong. Scutellum

somewhat triangular, moderately swollen, black-spotted along the margin or entirely black, with 4 bristles. Abdomen rather narrow and less chitinized, rather-long hairy; sixth tergite of female distinct; 5th tergite of male long bristly at the apical border; ovipositor large. Legs moderate in length; front femora bristly beneath; hind femora bristly at the apical fourth. Wings comparatively large; costal and subcostal veins furnished with rather short bristles;  $r_{1+2}$  rather long but sparsely bristled on the upper side from its base to the middle of first posterior cell ( $R_5$ ), on the underside there are some very sparse bristles on the basal half;  $r-m$  perpendicular, behind the middle of  $1M_2$ ;  $r_{1+2}$  and  $m$  nearly parallel at the apical portion; posterior cross-vein ( $m-cu$ ) perpendicular; second basal cell ( $M$ ) not enlarged; anal cell with the inferior angle drawn out into a short point, not longer than  $M$ ; pattern of the wings of the rivulet type, with some blackish streaks at the base.

Genotype: *Proanoplomus japonicus*, sp. nov.

Only one species of the new genus found in the our collection.

### 34. *Proanoplomus japonicus*, sp. nov.

(Fig. 31; Pl. III, fig. 5)

♂ ♀. A handsome medium-sized fly of black colour, with all the bristles black. Frons a little broader than the eye, parallel-sided, orange-yellow, furnished with rather sparse blackish brown hairs; lunula narrow, light waxy yellow with the upper edge brown, this colour extending below to the interior edge of eye-margins of face; vertex somewhat paler than frons, with a distinct but small round black ocellar triangle. Face narrow, distinctly longer than wide, whitish, but the eye-margins somewhat yellowish at the upper part. Back of the head blackish brown, with the lateral swellings whitish, and with a very broad reddish yellow median stripe from the vertex to the occipital foramen; cheeks whitish, with an ill-defined brown spot at just below the lower angle of eye, sparsely furnished with a rather long pale pubescence; bristles on the lower mouth-edge short but distinct. Antennae

orange-yellow; 1st joint very short, furnished with a few bristles on the apical margin; 2nd joint about twice as long as the basal joint or about as long as wide, the median bristle of the upper side and two or three apical bristles of the under side very long and about twice as long as the length of 2nd antennal joint, very sparsely pubescent; 3rd joint rather broad, about twice as long as wide, broadest in the middle, the upper margin slightly convex at the middle and concave at just before the more or less pointed tip, the under margin distinctly convex especially at the apical thirds strongly; arista brownish, with the base yellowish, a little longer than antenna, blackish plumose.

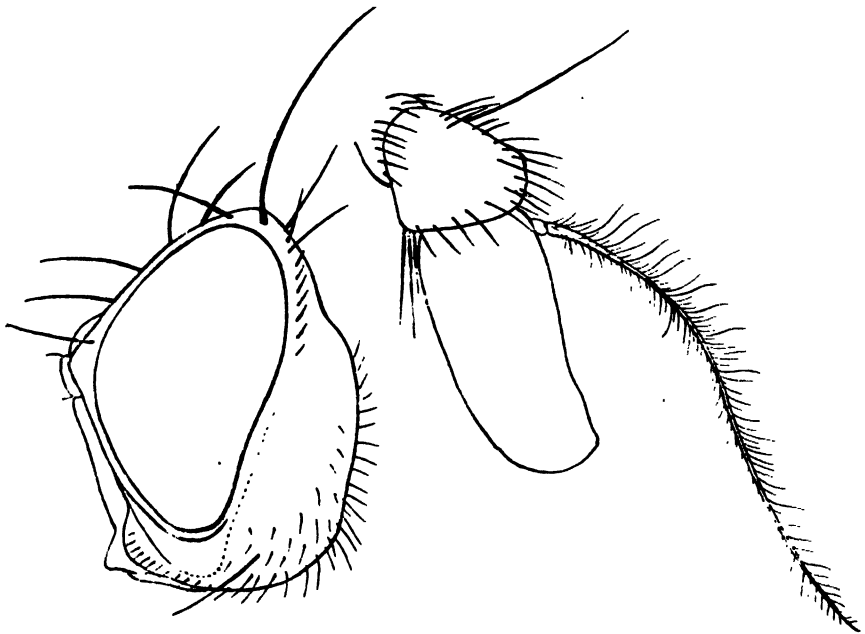


Fig. 31.

*Proanoplomus japonicus*, n. sp. ♀,  $\times$  ca 23. Left antenna,  $\times$  ca 60.

Palpi whitish, very broad, about twice as long as wide, moderately curved upwards with the tip rounded, distinctly bristly; proboscis light yellow.

Thorax rather strongly convex, shining black, furnished with a

numerous short yellow pubescence, with two broad parallel yellowish white tomentose longitudinal stripes which are extending from the anterior margin to the middle between the suture and the base of scutellum; along the suture there is a pair of greyish tomentose transverse spots, and on just behind the suture there is also one pair of very narrow yellow postsutural lateral stripes, which are present only on the anterior third of the postsutural disc; pleurae, metanotum and mesophragma shining black; humeral, very large transverse triangular mesopleural and large round metapleural spots waxy white. Scutellum slightly swollen, waxy white, the narrow basal band and three large round apical spots being black.

Abdomen blackish brown, distinctly obscured by a dense greyish white tomentum and also a yellowish white pubescence, excepting of the 1st tergite and the basal border of 3rd, 4th and 5th tergite distinctly brown or blackish brown but in the male the 3rd and 5th tergites nearly blackish, especially the 5th very shining and not dusted; 1st and 2nd longest, but in the male the 5th; 3rd to 6th (♀) or 5th (♂) tergites furnished with some long bristles at each posterior margin, on the 3rd tergite there are also some shorter bristles on the anterior border; ovipositor shining dark castaneous brown to black, flattened, its basal joint about as long as the 3rd, 4th and 5th tergites taken together or about  $1\frac{1}{2}$  times as long as the basal width. Ventral side dark castaneous brown, with the basal sternite and the posterior edge of each sternite yellowish.

Wings hyaline, with all the veins blackish; pattern and venation as in the figure.

Legs light yellow, black pubescent, the apical third or fourth of femora blackish brown, except for the front pair in which the brown colour is reduced as a small brown spot only on the outer side.

Length: Body (with ovipositor) 5.5–7.5 mm; wings 5.5–6.5 mm.

Hab. Japan—Nagano (VII); Kogota (VI); Otoineppu (VII); Fukuoka (VI).

Types in the Entomological Museum of Government Research Institute, Taihoku, Formosa.

XIII. Genus **PARANOPLOMUS**, nov.

This genus is allied to the preceding, but it is distinguished from that by the following characters:

Third joint of antennae gradually narrowed apically, with the tip rounded, the both sides being very slightly convex; arista shortly plumose, but the rays of upper side the same in length as of under side. Vertical bristles very short. Thorax rounded, as long as wide (in *Proanoplomus* about  $1\frac{1}{2}$  times as long as wide); pteropleural bristle only one; scutellum strongly swollen, semicircular.

Genotype: *Paranoplomus formosanus*, sp. nov.

Only one species from Formosa.

35. *Paranoplomus formosanus*, sp. nov.

(Fig. 32; Pl. III, fig. 6)

♂ ♀. A black, rather small species. Frons a little broader than the eye, very slightly broadened forwards, reddish orange-yellow, covered with a sparse blackish pubescence; lunula narrow, yellow, the upper edge reddish brown; vertex darker than frons, with a large rounded blackish ocellar triangle, and with one pair of blackish oblique-longitudinal lateral stripes, each on vertical calli. Face a little longer than wide, very slightly swollen in the middle but when seen from side very slightly concave with the somewhat reflexed upper mouth-edge, waxy white but the base of antennae somewhat brownish antennal grooves rather broad and very shallow, not reaching the lower mouth-edge; eye-margins very narrow, reddish yellow. Back of the head black on the upper half and pale reddish brown on the lower half, with the lateral swellings waxy yellowish white except for the inner third pale reddish brown; cheeks broad, moderately produced below, waxy yellowish white, pale pubescent, with a rather large dark brown spot at just below the lower angle of eye; eyes rather narrow, the anterior margin convex, the posterior margin slightly convex, the upper angle broadly and the lower angle very narrowly rounded. Antennae rather broad, reddish brown; 1st joint very short, about half as long as wide;



2nd joint subtriangular, as long as wide, the middle bristle of the upper side not conspicuous, the apical bristles of the under side very long but not longer than the 2nd joint; 3rd joint elliptical, about twice as long as wide or 2nd joint; arista a little longer than antenna, shortly plumose,

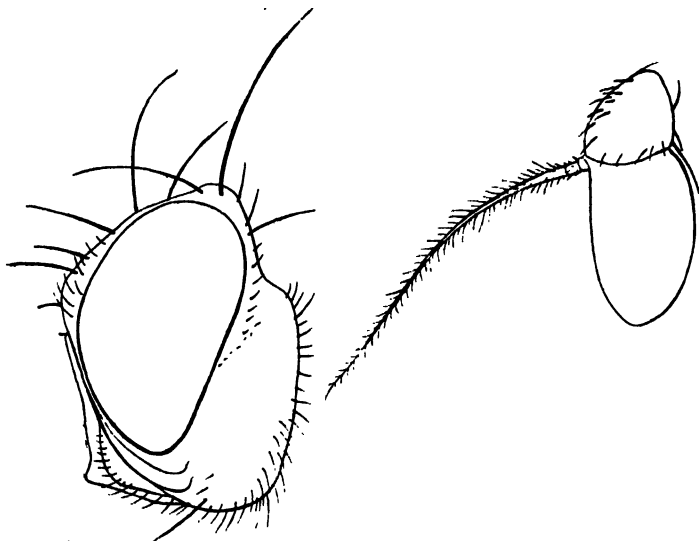


Fig. 32.

*Paranoloplus formosanus*, sp. nov. ♀, ca 28. Right antenna,  $\times$  ca 48.

the rays in both sides equal in length, black with the base reddish yellow. Palpi pale yellow, with the lower and apical margins brownish, rather small, very slightly curved upwards with the tip rounded, long bristly; proboscis brownish.

Thorax shining black, black pubescent, not tomentose, just behind the suture with a pair of orange-yellow lateral spots which are longitudinally crescent-shaped, their inner margins being nearly straight; humeral, mesopleural and doubled metapleural spots yellowish, the first being very small and the second transverse-triangular.

Abdomen shining black, and black pubescent, but the posterior half of either the 2nd and 4th tergites silver-white tomentose and pubescent; 5th (♂ ♀) and 6th (♀) tergites with rather strong bristles at their posterior margins, the latter very short; ovipositor moderately depressed,

shining black, about as long as the 4th and 5th tergites together, its basal joint a little longer than the basal width, or distinctly shorter than the 3 preceding tergites together. Ventral side greyish black.

Wings comparatively large, the venation and the pattern as in *Proanoplomus japonicus*, but  $r_{2+3}$  distinctly waved, and r-m less concave and rather near to the middle of  $1M_2$ .

Legs yellowish brown, with femora black, the pubescence and bristles as in *Proanoplomus japonicus*, but the latter stronger.

Length: Body 5 (♀)–4 (♂) mm; wings 5.5 (♀)–4.5 (♂) mm.

Only one pair from Formosa (Arisan X).

Types in the Entomological Museum of Government Research Institute, Taihoku, Formosa.

This species is very nearly allied to the indian *Anoplomus flexuosus*, BEZZI (= *Tephritis fasciventris*, MACUART), but it differs in the presence of the humeral bristle and in the colour of femora, as well as in many characters.

#### XIV. Genus **ACROCERATITIS**, HENDEL.

Suppl. Entomol. II., p. 82 1913

This is one of genera allied to *Ceratitis*. Head a little broader than high, with oblong eyes; face flatt, with a little reflexed upper mouth-edge, moderately broadened beneath; cheeks rather broad, but not long; back of the head normal; antennae inserted at the middle of the eyes, shorter than face, with the third joint sharply pointed at the tip, its upper margin being slightly concave and its under margin strongly convex; arista distinctly plumose, the upper rays about twice as long as those of the under side. Thorax about  $1\frac{1}{2}$  times as long as wide, the disc striped and spotted; pleurae not spotted; scutellum spotted, well-swollen. Abdomen broad and short, bristly on the sides and at the end; male genitalia small, but fairly prominent; ovipositor flatt, rather large and fairly long.

Wings broad and rather short, the apex being rather narrowly

rounded, with blackish streaks towards the base;  $r_{2+3}$  very slightly undulate;  $r_{4+5}$  parallel to  $m$ , bristly at the basal  $\frac{2}{3}$  of the upper side and on the under side only at the basal half; cross-veins perpendicular, of which  $r-m$  is in the middle of  $1M_2$ ; anal cell rather broad, the lower angle drawn out into a point, as long as the cell  $M$ .

Legs rather robust, but not long; middle tibiae with only one spur.

All the bristles rather strong, complete: Ocellar bristles strong, divergent, as long as the lower superior fronto-orbital bristles; fronto-orbital bristles 2:3; postvertical bristles rather short; mesopleural bristles 2; pteropleural 1; sternopleural 1; dorso-central in the middle of the postsutural disc or at just behind the line connecting the anterior supra-alar bristles; scutellar 4.

Genotype: *Acroceratitis plumosa*, HENDEL.

Only one species known.

### 36. *Acroceratitis plumosa*, HENDEL.

Suppl. Ent. II., p. 82 (1913).

*Chelyophora histrionica*, DE MEIJERE, Tijds. v. Ent., p. 205 (1914).

♂ ♀. Yellowish brown, medium-sized species. Head very slightly narrower than thorax. Frons yellow, with vertical calli light waxy yellow, at just above the lunula there is often a blackish crescent-shaped spot, in the middle part with a very few brownish hairs; lunula narrow, light waxy yellow, with the upper edge brown or blackish; vertex with a small black or blackish brown ocellar triangle. Face yellowish white, the lower third reddish yellow to yellowish brown, when seen from side straight on the upper  $\frac{2}{3}$  and then slightly obliquely produced forwards; antennal grooves distinct, moderate in width, extending to the mouth-edge; eye-margins very narrow, slightly broadened beneath, whitish. Back of the head pale yellow, the lower half distinctly blackish brown pubescent; cheeks rather narrow, moderate in length, sparsely blackish brown pubescent. Eyes narrow, the lower angle distinctly narrower than the upper one. Antennae rather broad; 1st joint very short;

second joint about as long as wide, or about 3 times as long as the basal joint, the middle bristle distinct, but shorter than the lower apical bristles; 3rd joint of female about twice as long as the 2nd, or about  $2\frac{1}{2}$  times as long as wide, distinctly narrowed towards the pointed tip, the tip being slightly curved upwards, of the male comparatively broader than in the female and the upper margin straight; arista a little longer than antennae, blackish, with the base yellowish or reddish, the rays being blackish. Palpi pale yellow to reddish brown, rather long bristly, narrow, slightly curved upwards, with the tip rounded; proboscis yellow to reddish brown.

Thorax yellowish, with a triangular spot at just behind the humeral calli, the postsutural lateral stripes and the very broad median stripe black but obscured by a greyish tomentum, the latter being divided into two stripes by a narrow black median stripe and the anterior half of those two stripes being greyish yellow or orange yellow (some one could describe that there are two orange yellow or greyish yellow median stripes which are not reaching to the base of scutellum), these blackish markings narrowly margined with black or blackish brown colour; notopleurae brownish; pleurae orange-yellow to yellowish brown, with a small blackish spot or transverse stripe below the notopleurae; metapleurae brownish, with a large yellowish white spot; metanotum and mesophragma castaneous to black; scutellum yellow, with 3 large black apical spots; pubescence yellowish, but on the metanotum there are numerous short blackish brown hairs.

Abdomen orange-yellow, blackish pubescent, on the two basal tergites (fused together) there are abundant rather long pale yellowish hairs, especially on the sides; each of the 3rd, 4th and 5th tergites with two transverse triangular black or castaneous basal spots; posterior margin of the 3rd to 5th ( $\delta$ ) or 6th ( $\varphi$ ) tergites furnished with some bristles of which those on the sides are very long; ovipositor flattened, its basal joint about as long as the four preceding tergites together, orange-yellow or reddish yellow, with the base and the tip black or blackish brown; hypopygium black, with genitalia yellow. Ventral side reddish yellow, darkened apically.

Wings with four rather broad yellowish brown bands, of which the apical three are united with each other at the apical half of submarginal cell ( $R_s$ ), the apical one along the costa extending to the middle of the mouth of 1st posterior cell ( $R_s$ ) and possessing two small hyaline spots along the costal margin; the 3rd band narrowest, from just below the apex of  $R_s$  to just before the tip of IIM<sub>s</sub>, the middle being distinctly yellow; the 1st band on the middle of wing broadest, narrowed and pointed behind, hardly reaching to the posterior margin of wing, with one hyaline spot in the stigma, at just below this spot there is one large subquadrate spot and at just below r-m also another smaller subtriangular one, the both spots being yellow; the second band a little narrower than the 1st, parallel with the preceding one, but the posterior end bent inwards at the tip of postical vein (cu) along the wing margin; the basal streaks narrow.

Legs pale yellow to orange-yellow, with the femora of two pairs of posterior legs brown to blackish brown, black pubescent; the lower bristles of front femora very long, 5 to 7; front coxae silvery tomentose, especially in the male striking.

Length: Body (without ovipositor) 5-6 (♂ ♀) mm; wings 4-5 (♂ ♀) mm.

Hab. Formosa—Giran (XII); Taihoku (IX); Shinchiku (VII); Toyen (XI); Horisha (III); Shonoryo (IV); Funkiko (V); Kansaiho (X); Kanshirei (VI); Heito (XII); Taihorin (VII); Tabani (III); Kosempo (VI); Takeyama (V); Koshun (V); Antun (VIII); Kijin (VIII).

Java.

Hosts:—*Bambusa dolichoclada*, HAYATA, *B. Oldhami*, MUNRO; *B. stenostachya*, HACK; *Dendrocalamus latiflorus*, MUNRO; *Phyllostachys Makinoi*, HAYATA; *Phyl. nigripes*, HAYATA; *Phyl. pubescens*, H. LEH.

Type of *plumosa* HENDEL destroyed by an insect in the Entomological Institute of Kaiser Wilhelm Gesellschaft, Berlin-Dahlem; while that of *histrionica* is preserved, in *Natura Artis Magistra*, Amsterdam, Holland.

XV. Genus **PARATRIRHITHRUM**, nov.

Near to *Trirhithrum*, BEZZI, but easily recognized by the pubescent (not plumose) arista, as well as by the round eyes.

Head much broader than high, with round eyes; face broad, shorter than wide, moderately broadened beneath, when seen from side distinctly but rather slightly hollowed in the middle; antennal grooves rather broad and reaching the mouth edge; frons very broad, with the sides straight, slightly broadened forwards; vertical calli narrow and long, reaching the middle of frons, wide apart from the eye-margins; back of the head normal; antennae stout, hardly reaching the upper mouth-edge, inserted in the middle of eye, the 3rd joint oval with the round tip; arista pubescent, not plumose.

Thorax round, a little longer than wide, strongly convex; scutellum swollen; pleurae with one large whitish mesopleural spot.

Abdomen broad and short, bristly at the posterior margin of either the 3rd-5th tergites.

Wings large, the apices being rather narrowly rounded, with the black streaks towards the bases;  $r_{2+3}$  distinctly undulate at the apical half;  $r_{4+5}$  very slightly curved, parallel with the apical portion of  $m$  which is very strongly curved at just after  $m-cu$ , distinctly bristled on the basal half, but on the under side not bristly;  $r-m$  perpendicular, in the middle of  $1M_2$  which is narrow and is nearly the same in width throughout the whole length;  $m-cu$  distinctly oblique, the lower angle of  $1M_2$  being rather sharply pointed; anal cell as wide as  $M$ , the lower angle pointed but not exceeding the latter; bands of wings only 3, united together at the stigma. Legs not long. All the bristles black, very strong; but ocellar bristles weak; fronto-orbital 2:1; mesopleural 1; pteropleural 1; dorso-central on the line connecting the anterior supralar bristles; scutellar 4.

Genotype: *Paratrirhithrum nitobei*, sp. nov.

Only one species from Formosa.

37. *Paratrirhithrum nitobei*, sp. nov.

(Fig. 33; Pl. IV, fig. 1)

♂. A small-sized, shining black species. Frons orange-yellowish, the upper half somewhat brownish, with the narrow long blackish vertical calli, distinctly broader than the eye; lunula indistinct; vertex nearly entirely blackish. Face whitish, with the base blackish brown; antennal grooves shallow; eye-margins comparatively broad. Back of the head black, toward the lower border pale reddish brown; cheeks comparatively long, pale reddish brown. Eyes when seen from side a little longer than wide. Antennae reddish brown; 3rd joint shorter

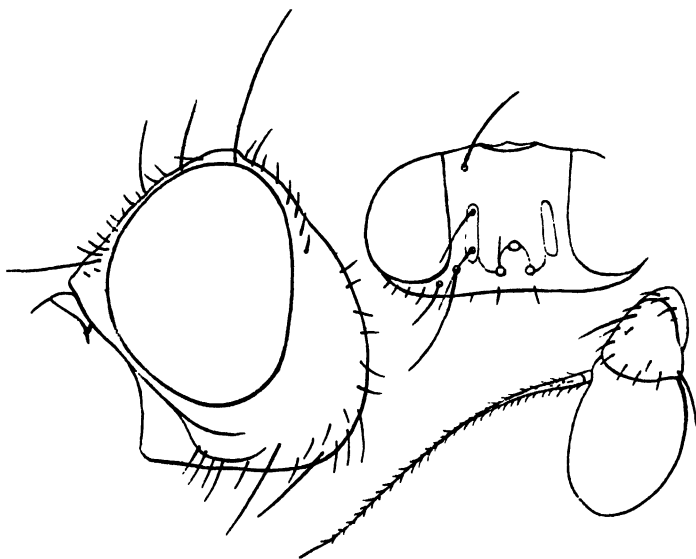


Fig. 33.

*Paratrirhithrum nitobei*, sp. nov. ♂.  $\times$  ca 60. Frons .....  $\times$  ca 35;  
right antenna .....  $\times$  ca 88.

than twice the length of the 2nd or about  $1\frac{1}{2}$  times as long as wide, broadest in the middle; the middle bristle of the second joint distinct. Palpi yellow, very slightly curved upwards, distinctly bristled; proboscis brownish. Thorax round, strongly convex, shining black, with 4 greyish yellow longitudinal stripes, of which the middle pair is long and is nearly touching from each other throughout the whole length, and the remaining

pair is distinctly shorter, these 4 stripes ending before the base of scutellum; pleurae, metanotum, mesophragma and scutellum shining black, the former with a large longitudinal yellowish white spot below the wing bases. Abdomen black, with two rather broad greyish tomentose bands, each on the 2nd and 4th tergites respectively; bristles on the 3rd, 4th and 5th tergites long.

Wings with 3 broad black bands, radiating from the stigma, the apical (or costal) band being broadest and not touching to the wing-margin, leaving a very fine transparent stripe which is triangularly notched at the tip of  $r_{2+3}$  and has a very small transparent notch at just after it; the middle band narrowest, straight from the stigma to the tip of cu; the third band perpendicular, connected with the basal streaks; base of wings broadly blackish, but the extreme base hyaline. Legs black, with the tibiae and tarsi yellowish. All the bristles black and strong, but the ocellar bristles distinctly shorter than the superior fronto-orbital or vertical bristles.

Length: Body 3 mm; wings 3.2 mm.

Only one male (Type) from Arisan (IX), Formosa, preserved in the Entomological Museum of Government Research Institute, Taihoku, Formosa.

## XVI. Genus **TAENIOSTOLA**, BEZZI.

Memoirs of the Indian Museum III., No. 3 (Indian Trypaneids . p. 119, 1913 .

Genotype—*Taeniostola vittigera*, BEZZI.

Medium-sized, yellowish. Head about as wide as thorax, as broad as high, with rather narrow cheeks; eyes oval; face hollowed below the antennal bases, the upper mouth-edge being moderately prominent; antennae inserted at the middle of the eye, the third joint distinctly rounded at the tip, sometimes somewhat pointed but never sharp; arista scarcely but long plumose; palpi bristly; ocellar bristles very strong, divergent and longer than the superior fronto-orbital bristles, which are two pairs, while the inferior ones are also two pairs; vertical bristles two pairs, of which the inner pair is very long; post-vertical bristles



small and parallel; bristles of the occipital row long; genal bristles long; vibrissal edges furnished with some short bristles.

Thorax moderately widened behind, with blackish stripes on the disc; chaetotaxy complete, with two mesopleural bristles, and also with 4<sup>(8)</sup> scutellar bristles, of which the apical pair is always weaker and parallel or crossing.

Abdomen black banded, more or less elongate, little narrowed at the base, bristly on the sides and at the tip; genitalia of male not prominent; ovipositor short, flattened, its basal joint very often bearing some long bristles at the tip.

Wings comparatively short and broad, with well-developed costal bristles; subcostal vein short;  $r_{2+3}$  straight;  $r_{4+5}$  a little curved, beset throughout its length with long bristles; r-m a little beyond the middle of  $1M_2$ ; m-cu long and perpendicular; anal cell drawn out into a narrow point, a little longer than M. The pattern consists of 5 complete not parallel but rather radical blackish cross-bands, of which the apical 3 are sometimes united with each other at the costal margin.

Legs uniformly coloured, short, with the usual black bristles; a single spur on the middle tibiae.

Two species found in Formosa, which are distinguished by the following diagnose:

#### Key to the species.

1. Bands of wing 5, yellowish brown or brown, narrow and separated from each other; thorax with 4 stripes; ovipositor not bristly at the tip of basal joint ..... *limbata*, HENDEL.
11. Bands of wing 5, blackish brown, rather broad, the apical 3 confluent at the costal margin; thorax with 5 stripes; ovipositor distinctly bristly at the tip of basal joint. .... *connecta*, HENDEL.

### 38. *Taenioskola limbata*, HENDEL.

Ann. Mus. Nat. Hung. XIII., p. 435, Pl. VIII, fig. 3 (1915).

A rather large, yellowish brown species, distinguished by 5 isolated

(8) 4 or 2 by BEZZI—Mem. Ind. Mus. III., '3, p. 119.

narrow yellowish or brownish bands of wings, as well as by a small but distinct black apical spot of scutellum.

♂ ♀. Head rather short, with nearly straight hind margin. Frons yellow, sometimes with a brownish median spot, about as wide as the eye, very slightly broadened forwards, moderately convex, furnished with a very sparse short and brownish pubescence; lunula very narrow, reddish brown to pale brown, this colour extending below to nearly the mouth edge along the inner edge of eye-margins of face; vertex with a very small blackish brown ocellar triangle. Face light yellow, slightly whitish tomentose, rather narrow, with the slightly elevated upper mouth-edge; antennal grooves moderate in width; eye-margins distinct, narrowest in the middle. Back of the head moderately swollen, waxy yellow; cheeks moderate in size, somewhat paler than the back of the head, yellowish pubescent, with a few very short black bristles at just above genal bristle; bristles on the lower mouth-edge very short. Eyes elliptical. Antennae narrow, distinctly shorter than face, orange-yellow; 1st joint very short, about half as long as wide, the upper apical margin furnished with some rather long bristles; 2nd joint comparatively big, the upper margin being strongly convex and the lower margin slightly convex, about as long as wide or about three times as long as the 1st joint, with the middle bristle long and distinct, and with numerous very short bristles on the apical half especially on the inner side; 3rd joint narrower than the 2nd, about twice as long as the 2nd joint or about  $2\frac{1}{2}$  times as long as wide, very slightly narrowed towards the round tip, straight; arista at the base of the 3rd joint, about  $1\frac{1}{2}$  times as long as the antenna, distinct and long plumose, brownish. Palpi rather broad, slightly curved upwards with the tip rounded, pale yellow, furnished with rather long bristles; proboscis large, reddish yellow.

Thorax moderately convex, about  $1\frac{1}{2}$  times as long as wide, yellowish brown or reddish brown, moderately shining, densely covered with a short golden yellow pubescence, with 4 narrow longitudinal black stripes from a little behind the anterior margin near to the posterior margin, of which the lateral one is interrupted at the suture and is reaching the lateral bases of scutellum; pleurae paler than the notum,

covered with a rather sparse short fine brownish pubescence, with a rather broad longitudinal yellow stripe along the upper margin of mesopleurae; metanotum black, while the mesophragma is reddish yellow; scutellum subtriangular, waxy pale reddish yellow, with a round black apical spot.

Abdomen in colour similar to the thorax, the anterior border of either the 3rd, 4th and 5th tergites black, the colour forming the entire bands which are about the same in width and narrower than a half the respective tergite, yellowish pubescent, on the posterior margin of each tergite with some bristles, of which those on the 5th tergite are very striking; 6th tergite of female and the basal joint of ovipositor black, the latter strongly depressed, being very broad and a little longer than the 5th and 6th tergites together. Ventral side ochraceous but darkened apically, rather long pubescent, while the bristles on the posterior margin of each sternite are very weak and short.

Wings large, hyaline but slightly yellowish, on the humeral cross vein with an indistinct yellow band which extends below to the base of Cu; stigma yellow, except the base distinctly black; 5 brown or yellowish brown bands rather narrow and about the same in width, the basal one paler, the 2nd parallel to basal one, the third also parallel but existing only on the posterior half of wing and its both ends (especially posterior end) curved inwards, the 4th from the middle of anterior margin of the first posterior cell ( $R_5$ ) obliquely to just below the upper corner of 2nd posterior cell ( $IIM_2$ ), and the 5th band from the apical part of marginal cell ( $R_1$ ) to the middle of the outer margin of submarginal cell ( $R_5$ ) along the costal margin, this band not connecting with the 2nd band and containing 3 small hyaline but yellowish marginal spots.

Legs pale reddish yellow, with two or three apical joints of tarsi brown or reddish brown; front femora furnished with about 5 long and strong bristles on the externo-inferior margin, and also with two rows of rather long bristles on the upper side; middle femora with some short bristles on the upper and lower sides, and with one very long striking bristle on the lower side; hind femora with some short bristles

on the externo-inferior side and with two rows of a few rather long bristles on the apical upper side, as well as with some very short bristles on the apical lower side, about the middle of the lower side there is also a very long but not strong bristle; middle tibiae with a very strong spur; middle and hind tibiae with a row of about 10 short but strong bristles on the outer side; pubescence light yellowish or pale reddish brown.

All the bristles black, but some ones on the legs and also on the back of the head, reddish brown.

Length: Body (without ovipositor) 6-7 mm ( $\delta$  ♀); wings 7.5-8 mm ( $\delta$  ♀).

Hab. Formosa—Sokutsu (VI); Kosempo (VI); Kanshirei (IV, IX); Taihorin (VII, VIII).

Types in the National Museum of Hungary, Budapest, besides in the Entomological Institute of Kaiser Wilhelm Gesellschaft, Berlin-Dahlem.

### 39. *Taenioskola connecta*, HENDEL.

Ann. Mus. Nat. Hung. XIII., p. 436,  $\delta$  (1915).

Very near to indian *vittigera*, BEZZI.

$\delta$  ♀. A medium-sized, yellowish species; distinguished by the three apical bands of wings united with each other at the costal margin, the five black longitudinal stripes of thorax, the bristly basal joint of ovipositor and the parallel-sided frons which has distinct a dark reddish brown median stripe, as well as by no apical spot of scutellum which has a basal spot.

Head about as wide as thorax, when seen from above nearly semi-circular with the posterior margin straight; frons about  $\frac{1}{3}$  as wide as head, parallel-sided, pale orange yellow or pale reddish yellow, covered with rather numerous fine blackish hairs, with a distinct rather broad dark reddish brown longitudinal stripe from the lunula to the elliptical black ocellar triangle; lunula very indistinct, light waxy yellow, its upper edge being blackish brown, this colour extending below along the inner-edge of the eye-margins of face; face not hollowed but at the

upper mouth-edge distinctly reflexed, light yellowish, obscured by a whitish tomentum, and with a large triangular black or blackish brown median spot along the mouth edge; antennal grooves and eye-margins the same as in *limbata*; cheeks moderate in size, the bristles at the vibrissal edge very strong; back of the head slightly swollen, paler than frons, at just above the occipital foramen there is a elliptical blackish spot. Eyes when seen from side elliptical, the posterior margin somewhat less convex than the anterior one. Antennae comparatively long but distinctly shorter than the face, reddish yellow; 1st joint paler, very short, along the apical margin furnished with some long bristles; second joint about twice the length of the basal joint or about  $1\frac{1}{2}$  times as long as wide, the apical half somewhat globular, the middle bristle conspicuous and long, the upper and inner sides furnished with numerous short bristles; 3rd joint somewhat brownish, about twice the length of the 2nd or about  $2\frac{1}{2}$  times as long as wide, gradually narrowed towards the tip at where it is somewhat pointed and bears a very minute bristle; arista a little longer than the antenna, long plumose, brownish with the base somewhat paler. Palpi pale yellow, gradually brownish towards the tip, comparatively large, slightly curved upwards, bristly; proboscis light orange-yellow.

Thorax about  $1\frac{1}{2}$  times as long as wide, yellow to reddish yellow, more or less yellowish tomentose and covered with numerous short black hairs, with one median, one pair of submedian and one pair of lateral longitudinal stripes, they are narrow and black, the median stripe from the anterior margin to the middle of the scutellum being narrowest but distinctly widened behind and pointed on the scutellum so that the scutellum has a triangular basal spot, the submedian stripes from just below the inner corners of humeral calli to just before the lateral junctions of scutellum, broadest, and the lateral pair from the front margins of humeral calli to the anterior bases of wings being nearly the same in width to the middle one; pleurae uniformly light yellowish, covered with numerous black hairs; mesophragma and metanotum black; scutellum without apical spot, but with basal spot as described above.

Abdomen orange-yellow or reddish orange-yellow; either the 2nd,

3rd and 4th tergites with a rather broad black basal band, which is half as wide as the length of the respective tergite but the 1st one is narrower; 5th with one pair of broad triangular black lateral spots which are hardly touching from each other at their inner ends; 6th segment of female dark castaneous brown, with a triangular orange yellow median basal spot; the posterior margin of each tergite very sparsely bristly, especially on the sides furnished with very long bristles; the basal joint of ovipositor about as long as the 5th and 6th tergites together or a little longer than the wide, the apical margin furnished with some long bristles. Ventral side dirty orange-yellow, sparsely covered with black hairs.

Wings moderate in size, hyaline but somewhat greyish, the veins and the black or blackish bands as in *vittigera* but slightly broad and the apical 3 being united with each other at the costal margin; at the tip of  $r_{2+3}$  and also on just below there is a distinct hyaline spot. Legs as in *limbata*.

All the bristles black, much longer and stronger than those of *limbata*; the genal bristles two.

Length: Body (without ovipositor) 6–7 mm (♂ ♀); wings 5.5–6.5 mm (♂ ♀).

Hab. Formosa—Suisha (V); Bانشoryo (XI); Kosempo (V, VI); Kanshirei (IX); Kagi (VII); Okayama (VII).

Host—*Phyllostachys nigripes*, HENDEL.

Type in the National Museum of Hungary, Budapest; female-type in the Entomological Museum of Government Research Institute, Taihoku, Formosa.

## XVII. Genus *ACROTAENIOSTOLA*, HENDEL.

Wien. Ent. Zeit. XXXIII., p. 80 (1914); Ann. Mus. Nat. Hung. XIII., p. 436 (1914).

Genotype—*Acrotaeniostola sexvittata*, HENDEL.

Brownish or blackish Trypaneids; allied to *Taeniostola* BEZZI, but differs as in follows:

The 3rd joint of antennae sharply pointed at the tip, the upper

margin being straight or slightly concave while the lower margin is always strongly convex; arista shortly plumose; ocellar bristles rather weak, never longer nor stronger than the lower superior fronto-orbital bristle; inferior fronto-orbital bristles 3 pairs; face not hollowed below the antennal bases; thorax and abdomen never black striped nor banded; r-m at just before the middle of  $1M_2$ ;  $r_{4+5}$  bristly on the upper side nearly throughout its length, while on the lower side there are only two or three bristles at the base;  $r_{4+5}$  with a short branch in  $R_s$  straight above m-cu;  $r_{2+3}$  very slightly but rather characteristically angulate at the point far straight above m-cu; brown or blackish bands of wings distinctly 6, of which the middle two are always united together at the hind margin of wings; ovipositor very long and slender, the basal joint being never bristly at the tip.

Found in Japan and Formosa, there are 3 species, of which one is new.

#### Key to the species.

1. r-m in the middle of  $1M_2$ .
  2. Reddish yellow to brownish, with the abdomen blackish except for the base; subapical band of wings less oblique; medium-sized species ..... *sexvittata*, HENDEL.
  22. Blackish species. Thorax almost always purple-black, with the sides yellowish brown and with scutellum waxy yellowish white; abdomen black, somewhat paler at the base; subapical band of wings strongly oblique ..... *scutellaris*, MATSUMURA.
11. r-m at just after the middle of  $1M_2$ . Thorax and abdomen black, somewhat purplish, with the scutellum and the humeral calli waxy yellowish white, latter slightly darker; two pairs of posterior femora of female distinctly blackish except for the base ..... *flavoscutellata*, sp. nov.

#### 40. *Acrotaeniostola sexvittata*, HENDEL.

Ann. Mus. Nat. Hung. XIII., p. 438, Pl. VIII, fig. 4 (1915).

A medium-sized, reddish yellow to brown species: Distinguished by the long subapical band of wings, the yellowish or brownish thorax and the yellowish base of abdomen.

♂ ♀. Frons about as wide as the eye, nearly parallel-sided, reddish yellow, with a very few brown hairs on the middle; frontal and vertical calli very distinct; lunula narrow, brown or dark brown; vertex with a reddish brown or blackish brown ocellar triangle. Face waxy whitish, moderately swollen, but when seen from side straight with very slightly reflexed upper mouth-edge; antennal grooves rather broad and shallow, reaching the lower mouth-edge; eye-margins yellowish, narrow, nearly the same in width throughout their whole length. Back of the head yellowish, with a V-shaped blackish stripe below the vertex, this stripe often being interrupted at the angle; lateral swellings somewhat conspicuous, light waxy yellow; cheeks broad and short, furnished with some black bristle-like hairs and two genal bristles; the bristles on the vibrissal edge long. Eyes long; the anterior margins convex; the posterior margins very slightly convex with the rather narrowly rounded lower angle. Antennae reddish yellow, with rather dark third joint, or somewhat brownish at the tip; 1st joint very short; 2nd joint a little longer than wide, very strongly swollen at the tip, the median bristle being distinct but not longer than the width of this joint, and the lower apical bristles also distinct but shorter than the middle one; 3rd joint about twice the length of the 2nd or about 3 times as long as wide, the upper and lower margins curved upwards with a sharp-pointed tip; arista very little longer than the antenna, blackish brown, shortly plumose. Palpi light yellow, bristly, rather small, slightly curved upwards, with the tip rounded; proboscis yellowish brown.

Thorax a little longer than wide, moderately convex, reddish yellow, but often purplish brown on the notum, pale yellowish pubescent; scutellum somewhat triangular, moderately swollen; mesophragma and metanotum in darker specimens purplish black.

Abdomen rather narrow and long, blackish brown with the base reddish yellow or reddish brown, blackish pubescent but on the basal tergites yellowish pubescent; 4th, 5th and 6th tergites with some long bristles on the posterior margins, especially on the latter two conspicuous; ovipositor long, flattened, its basal joint shining black, about as



long as three preceding tergites together, or about  $1\frac{1}{2}$  times as long as wide. Ventral side paler than the dorsum.

Wings rather large, hyaline with veins blackish or brownish, with 6 narrow blackish brown bands, of which the basal one is yellowish and short, the second one much blackish, strongly curved inwards at the middle and extending from the base of yellowish stigma to the tip of the anal vein through the humeral cross vein; the two middle bands rather straight, united with each other at the posterior margin of wing, of which the 1st one is extending to  $r_{2+3}$  through r-m and the 2nd one is extending to just below the costal band through m-cu; the 5th band paler than others, from just before the upper angle of IIM<sub>2</sub> to the posterior one-third of R<sub>3</sub> obliquely; the 6th (apical) band from the middle of the mouth of R<sub>5</sub> to the base of stigma along the wing margin.

Legs pale reddish-yellow to pale yellowish brown, sometimes the apical part of two pairs of posterior femora blackish; front femora with two rows of some long bristles on the outer side, and with 4 or 5 much longer ones on the externo-inferior margin; hind femora with one long bristle on the lower side and with some moderately long bristles at the apical portion; hind tibiae with two rows of short bristles on the upper side; the spur of middle tibiae very strong and long.

All the bristles black and rather strong, the inferior fronto-orbital bristles rarely four.

Length: Body (without ovipositor) 4.5–6 mm (♂ ♀); wings 5–6.5 mm (♀ ♀).

Hab. Formosa—Taihorin (VII); Kanshirei (VI); Hosan (VIII); Koshun (IV, V); Kankau (IV); Taito (II, III); Taiheisan (VIII); Shonoryo (V).

Types in the National Museum of Hungary, Budapest.

#### 41. *Acrotaeniostola scutellaris*, MATSUMURA.

Thous. Ins. Jap. Add. II., p. 416, pl. XXIII, fig. 12 (*Trypeta*) (1916).

♂ ♀. Thorax and abdomen black or purplish black, excepting of the humeral and notopleural calli, the pleurae and the basal part of

ventral side of abdomen reddish yellow or reddish brown, with the scutellum waxy yellow. All the bristles strong; genal bristles 3 or 4, very strong. Hind femora distinctly brownish or blackish at the apical half or third. Subapical band of wing very short, much oblique and never reaching to cu, often very faint. Basal joint of ovipositor as long as 4 preceding tergites together.

Length: Body (without ovipositor) 4.6–6 mm ( $\hat{\sigma}$  ♀); wings 5–6.5 mm ( $\hat{\sigma}$  ♀).

This is not a synonym of *sexvittata* as HENDEL has mentioned in his "Trypetidae der Palaearktischen Region p. 64 (1927)", but it may be a local variety of that.

Hab. Japan—Sapporo (VIII); Towada (VIII); Tokusa (VIII); Kumamoto (VII); Nagasaki (VII).

Types in the Entomological Museum of Hokkaido Imperial University, Sapporo.

#### 42. *Acrotaenioskola flavoscutellata*, sp. nov.

Fig. 34; Pl. IV, fig. 2

A black species, closely allied to *sexvittata*, HENDEL.

♀. Frons distinctly narrower than the eye, parallel-sided, reddish brown or pale brown, with the very long castaneous vertical calli, in one specimen the frontal calli also castaneous; lunula very narrow, yellowish but the upper edge blackish brown; vertex with a large blackish ocellar triangle. Face waxy yellow, somewhat obscured by a whitish tomentum, conspicuously broadened below; eye-margins much narrower than those in *sexvittata*. Back of the head nearly entirely blackish castaneous; cheeks reddish yellow, with only one genal bristle. Antennae with broad 3rd joint, which is about  $2\frac{1}{2}$  times as long as wide. Palpi somewhat pointed.

Thorax black, more or less purplish, yellowish pubescent; humeral calli waxy yellowish; pleurae blackish brown; metanotum and mesophragma shining black or dark castaneous; scutellum waxy yellow.

Abdomen shining black, black pubescent, but the ventre reddish

brown; ovipositor longer than that in *sexvittata*, about as long as 4 preceding tergites together.

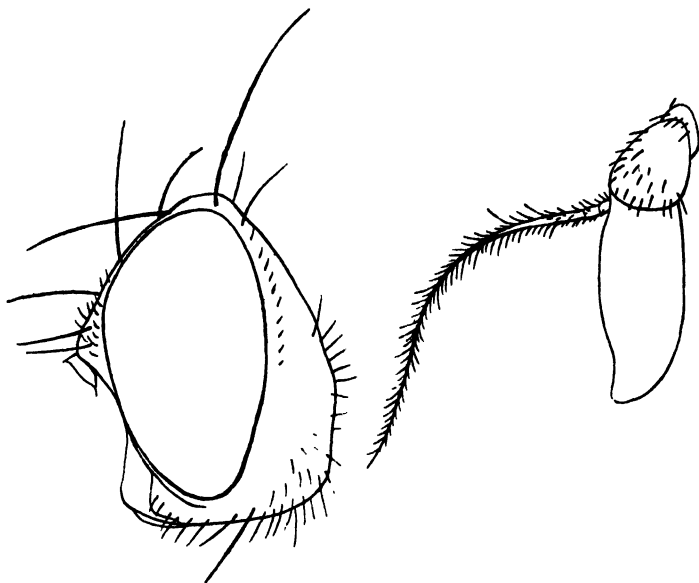


Fig. 34.

*Acrotaeniostola flavoscutellata*, sp. nov. ♀, × ca 28.

Right antenna, × ca 48.

Wings conspicuously narrowed at the apex, the cell  $R_5$  being comparatively narrower than that in *sexvittata* or very much narrower than  $1M_2$ ; r-m at just after the middle of  $1M_2$ ; distinct blackish bands 5, but with one indistinct subapical spot instead of the subapical band, the 3rd band not reaching to the posterior margin of wings, although the fourth is reaching to the costal margin; stigma entirely occupied by the 2nd band; subapical spot on  $1M_2$ .

Legs yellowish brown, but femora and tibiae of two pairs of posterior legs entirely blackish.

Length: Body with ovipositor 6 mm; wings 5.5 mm.

Only two females from Formosa (Shinchiku VII, Musha V).

Type in the Entomological Museum of Government Research Institute, Taihoku, Formosa.

XVIII. Genus **GASTROZONA**, BEZZI.

Memoirs of the Indian Museum, III., No. 3, p. 105 (1913).

Near to *Taeniostola* BEZZI, but easily distinguished by the weak ocellar bristles.

Head as high as or higher than broad, with narrow or round eyes; face flatt or concave, narrow or fairly broad; frons narrow; back of the head normal; antennae inserted at the middle of eyes, not longer than face, the 3rd joint rounded at the tip; arista plumose, with more or less long hairs. Thorax rather long, with or without longitudinal stripes; pleurae almost always with spots; scutellum more or less convex with or without black apical spot. Abdomen rather large, bristly on the sides and at the end; male-genitalia rather prominent; ovipositor flat and moderate in length. Wings moderate in size;  $r_{2+3}$  not undulate;  $r_{4+5}$  bristly on the both sides, but on the underside only on the basal half;  $r-m$  distinctly after the middle of  $1M_2$ , perpendicular;  $m-cu$  also perpendicular;  $R_5$  not divergent at the mouth; anal cell in the lower angle drawn out into a very narrow point, longer than  $M$ ; bands of wings distinct, without blackish streaks towards the base. Legs moderate in length. All the bristles black, moderately strong, complete; ocellar bristles shorter than fronto-orbital or vertical bristles, parallel or slightly divergent; mesopleural two; dorso-central after the line connecting the anterior supra-alar bristles; scutellar bristles 4.

43. *Gastrozona macquarti*, HENDEL.

Ent. Mitteilungen, II., pp. 38-39, 1913.

*Gastrozona melanista*, BEZZI, Mem. Ind. Mus. III., no. 3, p. 107, pl. VIII., fig. 18, 1913.

A reddish yellow, rather large species.

♂ ♀. Frons distinctly narrower than the eye, very slightly narrowed below, orange-yellow to reddish yellow, very sparsely pubescent, with a very narrow longitudinal brownish median stripe; vertical calli comparatively broad, light waxy yellow; lunula rather broad, greyish, with the upper edge reddish brown; vertex with a very small blackish brown ocellar triangle. Face rather narrow, moderately broadened be-

neath, yellow or pale yellow; antennal grooves shallow, but distinct and rather broad; eye-margins very narrow, more or less reddish. Back of the head pale yellow to yellow, on the large median area of the upper half distinctly brownish, brownish pubescent; the hairs on the lower portion becoming very long and paler, rather strongly swollen towards the cheeks, which are moderate in length and are furnished with some distinct bristles on above and beneath the genal bristle; bristles of vibrissal edge not long; occipital row very distinct, extending to below the middle of eye. Eyes nearly elliptical. Antennae reddish orange-yellow; first joint distinctly pale, very short; second joint subtriangular, about as long as wide, with the long median bristle which is longer than the bristles of the lower apical margin; 3rd joint about  $2\frac{1}{2}$  times as long as wide or shorter than twice the width of the 2nd joint, gradually narrowed towards the rounded tip; arista a little longer than the antenna, long but very sparsely plumose, the upper rays distinctly longer than lower ones. Palpi moderately curved upwards, with the rounded apex; bristles not very long.

Thorax rather long, strongly broadened in the middle, reddish brown or blackish brown, covered with a dense short yellowish pubescence, with two broad reddish yellow median stripes, which are extending to the middle of the postsutural disc; humeral calli, notopleurae and postsutural lateral stripes lemon-yellow, the latter bending inwards at the junctions of scutellum and then extending upwards to the end of median stripe; pleurae with 3 lemon-yellow spots, of which the largest one on the mesopleuron is longitudinally triangular, and the smallest one on just front the hind coxae is very narrow and short, the metapleural spot doubled; metanotum and mesophragma black; scutellum orange-yellow, with a very large black apical spot which is often extending to the whole base of scutellum.

Abdomen orange-yellow to reddish yellow, with two broad black transverse bands, of which the 1st one is on the posterior two-thirds of the 3rd tergite, extending to the basal one-third of the 4th and is broader than the 2nd one, while the second band is on the basal two-thirds of the 5th tergite and often is interrupted in the middle, this in the male

is represented by the latero-basal spots; the last sternite of male with two black basal spots; basal joint of ovipositor strongly shining black, about as long as the 4 preceding tergites together.

Wings hyaline, very slightly yellowish, with blackish veins, one broad median band from the middle of  $R_1$  straight to the end of anal vein becomes paler towards the lower end, an other broad (costal) band extending from the anterior end of the middle one to the middle of the mouth of  $R_5$ , these two being the same in width, on m-cu there is also a band which is broadened posteriorly, while one narrowest band, from the middle of the anterior margin of  $R_5$  to just before the middle of the outer margin of  $IIM_2$ , is connected with the costal band; all the bands yellowish brown to blackish brown; stigma yellowish brown, this colour extending to just above the basal cross-vein; on the base of the stigma with a black spot, and on the end of  $r_{2+3}$  with a hyaline spot.

Legs pale yellowish brown, the apex of femora of two pairs of posterior legs blackish or brownish; the bristles on the under side of front femora very long.

All the bristles black; two apical bristles of scutellum as long as the basal pair and crossing at the tip; postvertical bristles weak; spur of middle tibiae very long and strong.

Length: Body (without ovipositor) 5.5-7 (♂ ♀) mm; wings 6.5-6.6 (♂ ♀) mm.

Hab. Formosa—Kanshirei (V); Musha (V, VI); Horisha (III); Funkiko (IV, X); Shonoryo (V); Mizuho (VIII); Takesaki (V).

India.

Hosts: - *Bambusa dolichoclada*, HAYATA; *B. Shimadai*, HAYATA; *B. tuldoidea*, MUNRO; *B. Oldami*, MUNRO; *B. stenostachya*, HACK; *Dendrocalamus latiflorus*, MUNRO; *Phyllostachys Makinoi*, HAYATA; *Phyll. nigripes*, HAYATA; *Phyll. pubescens*, H. LEH.

Type in the Entomological Institute of Kaiser-Wilhelm-Gesellschaft, Berlin-Dahlem.

XIX. Genus **PARAGASTROZONA**, nov.

Very closely allied to the genus *Gastrozona* BEZZI, but distinctly differs as in follows:

Head when seen from front distinctly shorter than wide, or in profile as long as wide; frons distinctly broader than the eye, when seen from side obliquely straight, right-angle with face which is also very oblique and is about as long as frons; antennal grooves very deep, the middle part of face is therefore nearly carinate; vertex with a distinct carina at just behind the ocellar triangle; back of the head strongly swollen on the whole surface; eyes oval, small, in profile about as wide as the lower part of hind head; antennae short, the third joint distinctly broadened in the middle, the tip rounded but in the female nearly pointed; arista short pubescent; ocellar bristles very long, longer than the fronto-orbital bristles; palpi furnished with rather long bristles. Thorax short;  $r_{2+3}$  undulate; subcostal vein very strong and distinctly swollen; stigma as long as the second costal cell, while that of *Gastrozona* is distinctly shorter than the latter. Femora conspicuously thickened, especially in the front and hind legs; claws comparatively long.

Genotype: *Gastrozona japonica*, MIYAKE.

44. *Paragastrozona japonica*, MIYAKE.

(Fig. 35)

Bull. Imp. Centr. Agr. Exp. Stat. Japan, II., no. 2, p. 152, pl. IX, fig. 4  
(*Gastrozona*; 1919).

♂ ♀. A species of medium-sized and dark coloured. Frons yellowish, with the ocellar triangle shining black, very rarely with an indistinct brownish longitudinal stripe; vertical calli light waxy yellow; lunula not conspicuous, pale yellow. Face yellowish white, as long as wide; eye-margins rather broad, very slightly widened below. Back of the head light yellowish, long but sparsely pubescent; cheeks rather long, the vibrissal-edge furnished with some rather distinct but fine brown bristly hairs; genal bristle black and fine; bristles of the occipital row black, very fine. Postvertical bristles short and fine; inner

vertical bristles very strong and longest; ocellar bristles very long but shorter than the inner vertical pair; upper inferior and lower superior fronto-orbital bristles nearly the same in length, longer than the remaining fronto-orbital ones, but distinctly shorter than the ocellar pair. Eyes moderate in size, the anterior margin strongly convex, the posterior margin very slightly convex, and the upper and lower angles similarly rounded.

Antennae pale orange-yellow; first joint very short, ring-like; second joint subtriangular, a little longer than the apical width, the outer apical margin furnished with rather conspicuous black bristles, the middle bristle conspicuous and as long as the antenna; 3rd joint about twice as long as wide (♂) or less (♀); arista black, with the base yellow, longer than the antenna. Palpi yellowish white, slender, curved upwards, with the bristles blackish; proboscis moderate in size.

Thorax testaceous, shining but obscured by a whitish tomentum



Fig. 35.

*Paragastrozona japonica*, ♀,  $\times$  ca 18.

Right antenna,  $\times$  ca 32.



and also by a short silvery white pubescence, with 5 narrow non-tomentose shining stripes, of which the outer pair is interrupted on the suture; humeral calli and somewhat lunular latero-postsutural stripes distinctly ochraceous. Pleurae paler than the notum, with a broad ill-defined yellowish upper band. Scutellum ochraceous, with a large or often small transverse blackish apical spot. Metanotum and mesophragma shining castaneo-piceous. All the bristles long and black; apical scutellar pair distinctly shorter than the basal pair, their tips always crossing.

Abdomen yellowish, a little broader than thorax; 2 basal tergites somewhat reddish or rarely brownish; the second with a whitish tomentose posterior band; 3rd to 5th tergites with a broad castaneous or castaneo-piceous basal band, the rest more or less yellowish white dusted, these dark bands often interrupted in the middle and becoming narrower than usual; 6th tergite of female with a castaneous or blackish lateral spot; basal joint of ovipositor reddish yellow to reddish brown, depressed, a little longer than the 4 preceding tergites together, covered with numerous blackish hairs. Ventral side yellowish brown or dark brown.

Wings rather narrow, hyaline, with yellowish brown bands which are similar to those of *G. macquarti*, but the basal band very conspicuous and broadened towards the base, the median one distinctly curved, and the apical one possessing very often two or three hyaline dots along the costa.

Legs yellow, rarely with the apical portion of femora or very rarely the entire femora fuscous; claws yellow with the tip black; bristles on the femora and spur of middle tibiae black but not very long.

Length: Body (with ovipositor) 5.5–8.5 mm (♂ ♀); wings 5.5–6.5 mm (♂ ♀).

Hab. Japan—Sapporo (V); Garugawa (V); Minomo (IV); Kirishima (VI); Tokyo (V).

Types are not found in M<sub>RYAKE</sub>'s collection, probably lost or destroyed by an accident.

XX. Genus **CARPOPHTHORELLA**, HENDEL.

Wien. Ent. Zeit. XXXIII., p. 80 (1914); Ann. Mus. Nat. Hung. XIII., p. 448 (1915).

Very closely allied to the african *Carpophthoromyia* AUSTEN, but easily distinguished by no ocellar bristles, as well as by many inferior fronto-orbital bristles.

Head as broad as thorax, or as long as wide. Frons parallel-sided or very slightly narrowed below, about  $\frac{1}{3}$  as broad as head or about  $1\frac{1}{2}$  times as long as wide. Face rather narrow, in the middle slightly concave. Back of the head rather strongly swollen beneath; cheeks about as high as one-sixth the eye, which is nearly elliptical. Antennae inserted at just below the middle of eye, much shorter than face; 3rd joint rounded at the tip; arista distinctly but very sparsely plumose. Palpi very broad. Thorax short, nearly round, without stripes. Abdomen short and moderate in width; 6th tergite of female distinct, ovipositor flattened. Wings moderate in size, with two black longitudinal bands;  $r_{2+3}$  straight;  $r_{4+5}$  nearly parallel with  $r_{2+3}$ , but the apical third strongly curved posteriorly, bristled nearly throughout the whole length on the upper side, but with only a few bristles on the half of the under-side;  $r-m$  at just before the middle of  $1M_2$ , very slightly curved inwards;  $R_5$  broadened at the outer margin; anal cell drawn out into a sharp pointed inferior angle, a little longer than  $M$ . Femora moderately thickened; middle tibiae with a long apical spur; front femora strongly bristly beneath. Chaetotaxy complete, excepting of the ocellar bristles; fronto-orbital bristles 2:6 or 7; dorso-central bristles at just behind the line connecting the anterior supra-alar bristles; mesopleural bristles 2; scutellar bristles 4.

Only one species found in Formosa.

45. *Carpophthorella magnifica*, HENDEL.

Ann. Mus. Nat. Hung. XIII., p. 449, pl. IX, fig. 14 (1915).

Closely allied to *Gastrozona capillata* BEZZI, but easily distinguished by the bands of wings and by the black mesopleural bristles.

♂ ♀. Frons light orange-yellow; lunula very narrow, waxy white,

the upper edge reddish brown, this colour extending below to the cheeks along the inner edges of facial eye-margins; vertex with an indistinct castaneous ocellar triangle. Face yellowish white. Back of the head pale yellowish, with two triangular blackish brown spots on the upper half; cheeks brown below the lower angle of eyes; bristles on the lower mouth-edge extending above to the outer margin of antennal grooves and also to the eye-margin of hind head. Antennae yellow; 1st and 2nd joints furnished with reddish brown bristles; the middle bristle of the 2nd joint very long, about  $1\frac{1}{2}$  times as long as the joint; 3rd joint a little longer than twice the width, or shorter than twice the length of 2nd joint. Palpi yellowish, very slightly curved upwards, the apices very broadly rounded.

Thorax strongly shining black or blackish castaneous, black pubescent, with whitish humeral calli; pleurae slightly paler than the mesonotum, with a broad longitudinal stripe on the mesopleurae, and with a large double spot on the metapleurae, the both spots whitish and their lower margins yellowish brown; metanotum and mesophragma black or blackish castaneous; scutellum white, very broad, about  $\frac{1}{3}$  as long as wide, strongly swollen.

Abdomen reddish orange-yellow, but in the female shining black with two basal tergites (excepting the posterior margin of the 2nd) reddish orange-yellow; the ventre reddish ochraceous, with the lateral margins darkened; the basal joint of ovipositor shining black, furnished with some distinct black apical bristles; pubescence black, but mostly yellowish on the yellowish portions.

Wings with two blackish brown longitudinal bands, of which the anterior one is distinctly broader than the posterior band, and is running from the base to the middle of the mouth of R<sub>5</sub> along the costal margin, the same in width on the apical third, but the rest gradually broadened towards the wing-base with straight lower margin; the second band paler than the anterior one, the basal two-thirds nearly parallel with the lower margin of the costal band, but the apical one-third right angularly bent downwards and narrower than the rest, at the angle of this band connected with the costal band by a narrow

indistinct very short stripe; an indistinct pale spot after the tip of stigma.

Legs light yellowish, two pairs of posterior femora slightly brownish; pubescence mainly yellowish; bristles brownish or reddish yellow; apical spur of middle tibiae distinctly longer than its apical width, black.

Length: Body (without ovipositor) 6 (♂ ♀) mm; wings 6 (♂ ♀) mm.

Hab. Formosa—Kankau (IV, V); Kuraru (VII).

Types in the National Museum of Hungary, Budapest.

## XXI. Genus **CALOSPHENISCA**, HENDEL.

Wien. Ent. Zeit. XXXIII., p. 88 (1914; Ann. Mus. Nat. Hung. XIII., p. 453, 1915).

Allied to the genus *Pseudospheniscus*, HENDEL; distinguished by the very narrow frons and by the antennae inserted distinctly below the middle of eyes, as well as by the peculiar-shaped eyes.

Head as broad as the thorax; frons very narrow and long, parallel-sided, about  $\frac{1}{4}$ – $\frac{1}{5}$  as broad as the head or about  $1\frac{1}{2}$  times as long as the face; face distinctly followed in the middle, of the male much broader than in the female; antennal grooves rather broad, reaching the lower mouth-edge; back of the head flattened; vertex distinctly keeled at just behind the ocellar triangle; antennae reaching to the upper mouth-edge, inserted distinctly below the middle of eyes; eyes long and narrow, the posterior margin S-like curved, the anterior margin distinctly rounded below the middle, the upper angle rounded, and the lower angle nearly pointed; palpi small, moderately curved upwards, furnished with a few long bristles.

Thorax subquadrate, moderately convex above, without stripes, but with a large mesopleural spot; scutellum yellow or whitish.

Abdomen broad and short, without pale marking; 6th tergite of female very large, as long as the preceding one; ovipositor more or less cylindrical, its basal joint somewhat depressed and as long as the 6th tergite; genitalia of male small but distinctly exposed, with one pair of strongly curved hooks at the tip.

Wings rather narrow and long, without marginal spine; all the cells narrow and long; stigma very long, sharply pointed, about as long as the apical portion of the costal cell; inferior angle of  $1M_2$  ending at just before the wing margin; anal cell drawn out into a very narrow and pointed inferior producing;  $r_{2+3}$  distinctly wavy after the middle;  $r-m$  and  $m-cu$  slightly curved outwards, the latter comparatively very short;  $r_{4+5}$  distinctly but sparsely bristled on the basal half of the upper side only.

Legs rather stout, with a very strong apical spur of median tibiae.

Chaetotaxy complete: Ocellar bristles shorter than or as long as fronto-orbital bristles, distinctly divergent; postvertical bristles weak; genal bristle strong and one; fronto-orbital bristles 2:3; occipital row of bristles distinct; dorso-central bristles at just before the line connected the anterior supra-alar bristles; mesopleural bristles only one; scutellar bristles 4.

Genotype: *Calosphenisca volucris*, HENDEL.

Two species from Formosa are distinguished by the following diagnosis:

1. Wings blackish, but the apical third hyaline with a narrow blackish marginal band, on the tip of costal cell there is a small hyaline spot, and on the apex of  $1M_2$  also a narrow transverse streak which is parallel with the basal margin of apical hyaline portion; the basal part of 3rd posterior cell (Cu) and the axillary cell more or less hyaline.....*volucris*, HENDEL.
11. Wings blackish, with three broad hyaline transverse streaks on the posterior margin, and also two small hyaline spots on the costal margin.....*5-maculata*, sp. nov.

#### 46. *Calosphenisca volucris*, HENDEL.

Ann. Mus. Nat. Hung. XIII., p. 454 (1915).

♂ ♀. Frons reddish orange-yellow or reddish brown; lunula greyish yellow; vertex with a medium-sized blackish ocellar triangle, and with the vertical calli somewhat darker than frons; face orange-yellow or whitish yellow, with somewhat reddish brown or yellow lower edge, of the female narrow, longer than wide, but of the male strongly widened beneath and shorter than wide; back of the head brown or

blackish brown; cheeks pale yellowish brown or ochraceous, with or without a black spot at just below the lower angle of eyes. Antennae reddish yellow; 3rd joint about twice as long as wide, its upper margin very slightly concave and its lower margin strongly convex, with the tip rounded, of the male comparatively broader; middle bristle of the 2nd joint very weak; arista a little longer than the antenna, short pubescent. Palpi narrow, slightly curved upwards, with the tip rounded.

Thorax dark sepia, black pubescent, very slightly greyish tomentose excepting of the humeral and notopleural calli; pleurae, mesophragma and metanotum strongly shining dark sepia, with a very large subquadrate whitish mesopleural spot; scutellum yellowish white, large, subtriangular, about a half as long as wide.

Abdomen dark sepia, black pubescent, along the apical margin of the 5th (♂) or 6th (♀) tergite with a few long bristles; of the female gradually broadened towards the 6th tergite, which is about as long as the 5th; of the male broadest in the middle, with the tip somewhat pointed; hypopygium yellowish; genitalia pale reddish brown, its hooks very small and very slightly curved at the tip; the basal joint of ovipositor a little longer than the preceding tergite, sepia.

Wings sepia; a very large triangular subapical spot, a narrow streak from just below the lower corner of  $R_5$  to below the lower angle of  $1M_2$ , a small subquadrate spot on the apical third of the second costal cell and a rather broad streak from the upper basal corner of Cu to the basal half of the mouth of the cell hyaline; axillary cell hyaline; through the 1st and second basal, anal and discoidal cells there is an indistinct very narrow hyaline longitudinal median streak; squamulae blackish brown; halteres yellowish brown.

Legs of the male yellow, with the hind femora brownish; of the female dark brown, with the tibiae (except for the basal half of 4 posterior legs) and tarsi yellowish; pubescence brownish or blackish, but on the tibiae there are numerous yellowish hairs; the apical spur of middle tibiae very long strong.

Length: Body (without ovipositor) 3-3.5 (♂ ♀) mm; wings 3.5-4 (♂ ♀) mm.

Hab. Formosa—Toyenmongai; Koshun (IV); Kankau (IV).  
Types in the National Museum of Hungary, Budapest.

47. *Calosphenisca 5-maculata*, sp. nov.

(Fig. 36; Pl. IV, fig. 3)

Easily distinguished from *volucris* HENDEL by the hyaline spots of wings, as well as by uniformly ochraceous legs.

♂. Frons orange-yellow or reddish ochraceous, silvery white tomentose forwards; lunula rather large, pale ochraceous; vertex with a round black ocellar triangle; vertical calli shining brownish; face whitish,

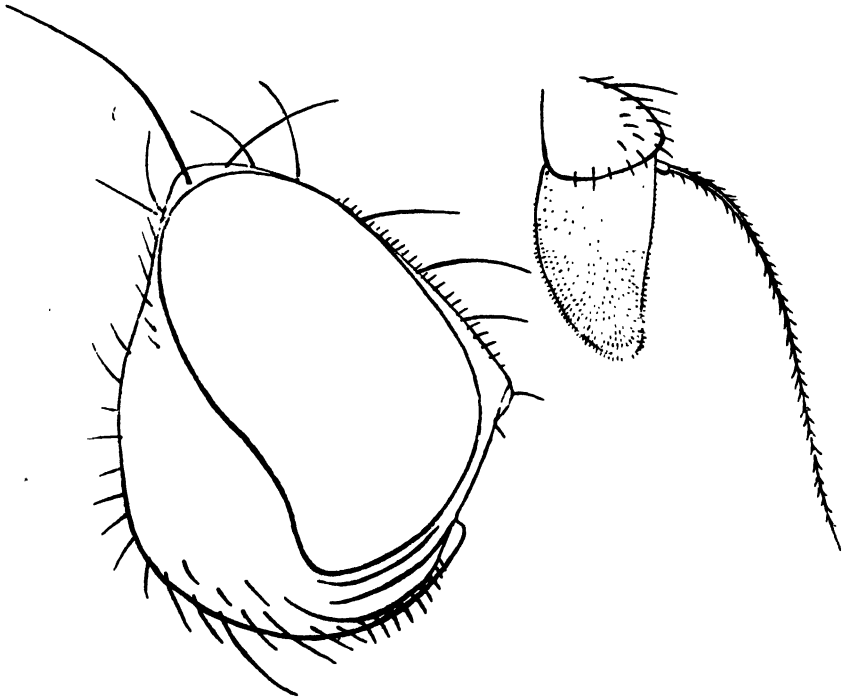


Fig. 36.

*Calosphenisca 5-maculata*, sp. nov. ♂,  $\times$  ca 40. Left antenna,  $\times$  ca 60.

with the eye-margins orange-yellow, shorter than wide; back of the head brown, except the upper/median portion and lower lateral portions orange-yellow, the pubescence very sparse and blackish; cheeks pale

ochraceous, without spot, furnished with a few brown bristles on the lower margins. Eyes large, the anterior margin nearly obtuse at the base of antenna, the posterior margin very slightly S-like curved, the antero-inferior margin nearly straight, the lower angle somewhat angulate, and the upper angle narrowly rounded. Antennae orange-yellow; 3rd joint about twice as long as wide, gradually narrowed towards the rounded tip, the upper margin being nearly straight and the lower margin convex; median seta of the 2nd joint shorter than the width of the joint; arista much longer than the antenna, short pubescent. Palpi short.

Thorax dark sepia, moderately shining, very slightly greyish tomentose and sparsely black pubescent, with a large subquadrate mesopleural spot white or pale ochraceous, and with the comparatively large scutellum ochraceous; all the bristles strong, black; 4 scutellar bristles the same in length or longer than others and the apical pair parallel.

Abdomen dark sepia, moderately shining, black pubescent, the lateral margins of the 2nd and 3rd tergites and also the apical margin of the 5th furnished with a few short black bristles; hypopygium sepia, with the yellowish genitalia which has long latero-apical hooks.

Wings sepia with the axillary cell hyaline, on the costa with two small hyaline spots, and on the posterior half with three large long transverse hyaline spots, of which the apical one is triangular and extends from  $R_1$  to  $IIM_1$ , the second from  $1M_2$  to the tip of Cu is shortest, and the third spot in Cu extends from the upper basal corner to the lower apical corner; halteres orange-yellow.

Legs pale orange-yellow; bristles on the outer surface of front femora conspicuous, black; pubescence blackish, but on the tibiae there are numerous yellowish hairs; spur of middle tibiae black, very long and strong.

Length: Body 4-4.2 mm; wings 4.8-5 mm.

Hab. Formosa - Kotosho (III, IV).

Type in the Entomological Museum of Government Research Institute, Taihoku, Formosa.



XXII. Genus **PSEUDOSPHENISCUS**, HENDEL.

Suppl. Entom. II., p. 82 (1913); Wien. Ent. Zeitg. XXXIII., p. p. 83, 88 (1914);  
Ann. Mus. Nat. Hung. XIII., p. 451 (1915).

Head as broad as or a little narrower than the thorax; frons about as wide as or narrower than the eye, parallel-sided; vertex more or less carinate at just behind the ocellar triangle; face not hollowed, when seen from side straight or very slightly concave, with the antennal grooves not conspicuous; back of the head not distinctly swollen, rather flattened; antennae inserted in the middle of eyes, distinctly shorter than the face, with the 3rd joint rounded at the tip; palpi small, furnished with a few long bristles; eyes oblong, the posterior margin slightly convex, the anterior margin nearly equally rounded outwards, the upper and lower angles rounded but the latter distinctly broader than the former.

Thorax short, almost always broadened behind, moderately convex above, blackish, without yellowish spot, but the humeral calli sometimes paler coloured.

Abdomen black, without pale marking; ovipositor very short, flattened; genitalia of male with straight rather long appendages; 6th tergite of female distinct.

Wings rather broad, with very short marginal spine; stigma very short, about half as long as the second costal cell, its tip more or less pointed; the lower angle of 1M<sub>2</sub> far apart from the wing margin; anal cell as in *Calosphenisca*; r<sub>2+3</sub> more or less undulate; r<sub>1+3</sub> slightly curved, on the upper side bristly but not throughout the whole length; m-cu somewhat curved outwards, but r-m almost always straight.

Legs short and rather stout, with a strong apical spur of median tibiae.

Chaetotaxy complete; ocellar and postvertical bristles very weak, almost always divergent; fronto-orbital bristles comparatively long, 2:3; occipital row composing of rather strong bristles; dorso-central bristles distinctly behind the line connecting the anterior supra-alar bristles; mesopleural bristles 2; scutellar bristles 4.

Genotype: *Pseudospheniscus angulatus*, HENDEL.

## Key to the Japanese species.

1. Second costal-cell uniformly black or brown, very rarely with a very small hyaline spot.
  2. r-m very far behind the middle of  $1M_2$ , a little shorter than the length from its base to the upper angle of  $1M_2$ ;  $r_{4+5}$  nearly straight
    3. Median hyaline cross band interrupted twice; large triangular subapical hyaline spot not divided into two by a black subapical band..... *angulatus*, HENDEL.
    33. Median hyaline cross band interrupted only once; large triangular subapical hyaline spot divided into two by a distinct, oblique, black subapical band.....*connexus*, HENDEL.
  22. r-m a little after the middle of  $1M_2$ ;  $r_{4+5}$  slightly but distinctly waved; median hyaline cross-band not reaching to the posterior margin of wing; large subapical hyaline spot divided into two by a oblique black subapical band.....*superfluctus*, ENDERLEIN.
11. Second costal cell with a large hyaline spot or entirely hyaline; r-m very far behind the middle of  $1M_2$ .
  2. Back of the head not swollen.
    3. Large hyaline subapical spot with a blackish narrow oblique subapical streak which is not entirely acrossed the spot. ....*fossatus*, FABRICIUS.
    33. Large hyaline subapical spot entire, without blackish band. ....*alboscutellatus*, WIEDEMANN.
  22. Back of the head moderately swollen on the lower half. ....*inflatus*, sp. nov.

48. *Pseudospheniscus angulatus*, HENDEL.

Ent. Mitt. II., p. 38, ♂ 1913'.

The coloration and size are very similar to *Trypeta superfructa* ENDERLEIN, but differs in the legs black except for the tarsi yellowish, as well as in the pattern of wings.

♂. Head as wide as thorax, slightly less higher than broad; frons as broad as the eye, pale yellowish brown with a large ill-defined quadrate dark brown median spot, towards the lateral margins slightly brownish; lunula somewhat greyish; vertex with a rather large ocellar triangle and the vertical calli blackish, between the both there is a pair of inconspicuous dark brownish spot. Face distinctly longer than wide, reddish brown, but the lower half blackish brown; eye-margins narrow, same in width throughout the whole length, reddish brown; cheeks with

a distinct genal groove. Back of the head entirely black, black pubescent. Antennae reddish brown; 3rd joint slightly darkened, its upper margin straight and its lower margin strongly curved, the tip being very narrowly rounded, about twice as long as wide; median seta of the 2nd joint long; arista about twice as long as the antenna, shortly pubescent. Palpi rather narrow, rather strongly curved upwards.

Thorax black, obscured by a greyish tomentum, with one pair of very narrow non-tomentose submedian stripes; humeral and notopleural calli less tomentose and somewhat brownish; pleurae, mesophragma and metanotum more or less shining black, but the bases of wings reddish brown; scutellum large, more or less flattened above, subtriangular, black, greyish tomentose; pubescence black.

Abdomen black, black pubescent; posterior margin of 5th tergite furnished with some long black bristles; hypopygium strongly shining black, with the genitalia brown.

Wings a little longer than twice the width, with the posterior margin strongly curved, blackish brown, the apical third except for the narrow costal border, a submedian interrupted cross-band, a long-triangular spot at just after the stigma, and a narrow longitudinal streak in Cu hyaline; axillary cell greyish; halteres reddish; squamulae greyish.

Legs blackish, black pubescent, but the tip of tibiae reddish brown and the tarsi yellowish and yellowish pubescent.

All the bristles black; the bristles of occipital row comparatively strong.

Length: Body 3 mm; wings 3 mm.

Hab. Formosa—Arikan (VI).

Only one male (Type) in the Entomological Institute of Kaiser Wilhelm Gesellschaft, Berlin-Dahlem.

49. *Pseudospheniscus connexus*, HENDEL.

Ann. Mus. Nat. Hung. XIII., p. 453 (1915).

Small species of fusco-testaceous coloured, distinguished by only once interrupted hyaline median cross-band, as well as by two apical hyaline spots.

♂ ♀. Head a little narrower than or as broad as thorax, about as high as wide; frons much narrower than the eye, ochraceous, without spot; lunula paler; vertex conspicuously carinate, with paler vertical calli and rather small blackish ocellar triangle. Face narrow, strongly widened below, about as long as the lower width, whitish yellow; eye-margins narrow, slightly broadened beneath; cheeks with the deep genal sulcus and a long black genal bristle; antennal grooves conspicuous but not reaching the lower mouth-edge. Back of the head brown, black pubescent, but the lower portion yellowish. Antennae orange-yellow to pale reddish brown; 3rd joint narrowed toward the rounded apex, with the both margins nearly straight; median seta of the second joint somewhat shorter than the apical width of the joint, strong and black; arista about  $1\frac{1}{2}$  times as long as the antenna, shortly pubescent. Palpi small, nearly straight, pale yellow, furnished with rather many black bristles.

Thorax uniformly blackish, a little obscured by a greyish tomentum, with a pair of very inconspicuous darker submedian stripes; pleurae, mesophragma and metanotum strongly shining; the bases of wings rather brownish; scutellum large, triangular, flattened above, with the margins more or less carinate, fusco-testaceous. All the bristles very long; the apical scutellar bristles much shorter than the basal pair and crossing apically.

Abdomen fusco-testaceous, strongly shining, black pubescent, on the posterior margin of each tergite there are a few short bristles which become very longer on the apical tergite; ovipositor piceous, its basal joint shorter than wide; male genitalia yellowish brown, with two long appendages pale yellow.

Wings longer than twice the width, the posterior margin moderately curved, the costa rather strongly curved toward the apex where is rather broadly rounded, blackish except for the axillary cell hyaline; on the costal border there are two distinct triangular hyaline indentations, of which the small one is on the outer side of stigma and reaches to  $r_{4+5}$ , while the large one is placed on from the middle of the costal margin of  $R_1$  to the middle of the posterior portion of the anterior margin of  $IM_2$ ; on the posterior border there are 4 transverse hyaline

bands, of which the apical one is parallel with the apical margin of wing, extending from near the tip of  $r_{1+2}$  to the tip of  $m$ , the subapical one is triangular and is placed in the middle of  $IIM_2$ , extending towards  $r_{1+2}$ , the middle one is very small and dot-like, placed on near the tip of  $cu$ , and the remaining is longest and longitudinal, placed along the outer side of anal vein, its base sometimes narrowly extending upwards to the root of radial vein.

Legs yellowish, blackish pubescent, the posterior two pairs of femora blackish, rarely the outer side of front femora and the posterior tibiae also brownish.

Length: Body 3.5–4 mm (♂ ♀); wings 3.8–4 mm (♂ ♀).

Hab. Formosa – Kankau (VI), Koshun (VI).

Types in the National Museum of Hungary, Budapest.

#### 50. *Pseudospheniscus superfluctus*, ENDERLEIN.

Zool. Jahrb., Abt. Syst. XXXI., Heft. 3, p. 428, fig. j ♂ ♀ (*Trypeta*) (1911).

Fusco-testaceous, with the head and legs yellowish; distinguished from the preceding species by no posterior median hyaline spot and by very long costal median hyaline band.

♂ ♀. Head as broad as thorax; frons distinctly narrower than the eye, or about twice as long as wide, light yellow, its margins somewhat greyish tomentose; lunula slightly greyish; vertex with an ill-defined brownish ocellar triangle; vertical calli shining light yellow. Face longer than wide, yellowish white; eye-margins yellow, moderate in width, slightly broadend below; cheeks narrow, with an inconspicuous genal groove, a rather strong but short black genal bristle and a row of short black bristle-like hairs. Antennae pale yellow; 3rd joint narrowed towards the rounded tip, its upper margin being straight and its lower margin moderately curved; median seta of the 2nd joint longer than the joint, black; arista blackish, about  $1\frac{1}{2}$  times as long as the antenna, black pubescent. Palpi yellow, whitish tomentose, furnished with black bristles.

Thorax purple-blackish, distinctly but slightly whitish tomentose and black pubescent, with a pair of very fine black submedian stripes;

humeral calli, pleurae, mesophragma and metapleurae strongly shining and somewhat yellowish; scutellum moderate in size, very little flattened above. All the bristles very long and black; apical scutellar bristles shorter than the basal pair.

Abdomen as in the preceding species, but male-genitalia blackish brown and with a very broad and long ventral plate which has two small hooks at the broad apex.

Wings not longer than twice the width, the posterior margin being strongly curved, fuscous with the axillary cell hyaline and with 5 hyaline markings as follows: A very small spot at the base of  $R_1$ ; a single indentation at the fore border, just after the stigma, is triangular and is reaching to  $r_{1+2}$ ; a median cross band, from the costa to the posterior margin of  $1M_2$ , is straight and slightly narrowed posteriorly; an apical band, from below  $r_{2+3}$  to the tip of  $M$ , is nearly straight and is very slightly narrowed anteriorly; a subapical triangular spot, from  $r_{4+5}$  to the apical margin of  $IIM_2$ , is very large and is nearly occupied  $IIM_2$ ; an oblique longitudinal band, from the apex of anal cell to the tip of anal vein, is straight and a little broadened apically.

Legs as those in *connexus*.

Length: Body 4–4.3 mm ( $\sigma$  ♀); wings 3.8–4 mm ( $\sigma$  ♀).

Hab. Japan—Okinawa (VII).

Formosa—Heishana (IV), Arisan (VI), Ampin (V, VI), Takao (XII), Kosempo (VII), Koshun (III), Kankau (VII), Kotosho (III).

Types in the Natural History Museum of Stettin, Germany.

# 51. *Pseudospheniscus fossatus*, FABRICIUS.

Syst. Antl., p. 320 (*Tephritis*) (1805).

*Anomoia elimia*, WALKER, List Dipt. Brit. Mus. IV., p. 1033 (1849).

*Ortalis regularis*, DOLESCHALL, Nat. Tijdschr. Ned. Ind. XVII., p. 119 (1859).

*Trypeta fessata*, BIGOT, Journ. Asiat. Soc. Bengal, LXI., p. 224 (1892).

Fusco-testaceous to piceous, with the head and legs yellowish brown; easily distinguished from three preceding species by the hyaline costal cell, as well as by 3 broad hyaline apical bands of wings.

♂ ♀. Head a little broader than thorax; frons about  $\frac{1}{2}$  as wide as head, or about twice as long as wide, dirty yellow or yellowish brown, the margins slightly greyish dusted; lunula distinctly whitish tomentose; vertex with the ocellar triangle black, and with the rather ill-defined vertical calli usually somewhat darker. Face very little longer than wide, reddish yellow to dark brown; eye-margins somewhat paler, distinctly widened below; cheeks very narrow, with a distinct genal groove, a long genal bristle and some black bristly hairs; back of the head blackish, with the margins yellowish. Antennae ochraceous or reddish yellow, rather broad; 3rd joint a little shorter than twice the width, its tip in the male broadly rounded and in the female conspicuously narrowed; median seta of the 2nd joint a little shorter than the joint, black; arista black, about  $1\frac{1}{2}$  times as long as antenna, rather long black pubescent. Palpi comparatively slender, yellowish but in some specimens brownish, furnished with some black bristly hairs.

Thorax as in *superfluctus*, but comparatively long, usually black and rarely brownish black; scutellum strongly flattened above.

Abdomen as in *superfluctus*, but the male-genitalia smaller and its ventral plate narrowed and pointed apically.

Wings twice as long as wide, with the apex rather narrowly rounded, blackish brown with the costal and axillary cells and the base of  $R_1$  hyaline; the hyaline markings as follows: A triangular spot at just after the stigma as in *superfluctus*; a median cross band, from the costa to the posterior margin near the tip of Cu, slightly narrowed posteriorly and very indistinctly curved; a triangular subapical spot very long, from  $r_{2+3}$  to the posterior margin, nearly occupied IIM<sub>2</sub> and connected with the apical cross-band, the latter being broader than that in *superfluctus*.

Legs as those in *superfluctus*, but the posterior tibiae very often darkened.

Length: Body 3-5 mm (♂ ♀); wings 3.8-4.5 mm (♂ ♀).

Hab. Formosa—Tabo (VIII); Tappan (VI); Arisan (IV); Shonoryo (V); Musha (V, VI); Shishito (V); Taichu (XII); Hozan (VII); Kankau (VIII); Domon (VII); Taito (II, III); Chipon (V); Karenko (VII, VIII).

Philippines ; Burma ; Java ; Singapore ; Amboina ; India.

Type in Copenhagen, Denmark. In Formosa the flies are very often captured on the flowers of *Tetrapanax papyrifera* KOCH.

52. *Pseudospheniscus alboscuteclatus*, v. D. WULP.

Tijdschr. v. Entom. XLI., p. 217, pl. X, fig. 15 (*Anomoea*) (1898).

Black, very near to the preceding, but mainly differs in the following points :

♂ ♀. Head wholly yellow ; vertical calli comparatively short, not darkened ; face distinctly whitish tomentose ; cheeks with a brown genal groove, which is sometimes not tinged, with the bristly hairs very minute. Male-genitalia yellowish, comparatively large.

Thorax pale yellowish tomentose ; humeral calli yellowish ; prothorax pale yellowish ; pteropleura almost always reddish brown ; scutellum distinctly pointed, usually paler than the notum, the apical bristles almost always parallel or divergent. Ovipositor very short ; male-genitalia large, yellowish but the ventral plate blackish. Legs yellowish, but two posterior pairs of coxae blackish and also two posterior pairs of femora brownish. In the wing-pattern the apical band and subapical triangular spot fused together, the dividing streak being disappeared.

Length : Body 3.5-4 mm (♂ ♀) ; wings 3.5-4 mm (♂ ♀).

Hab. Formosa - Asahi (V), Kosempo (VI), Kankau (VI), Kotosho (VII).  
Sumatra ; Burma.

This species is very rare in Formosa, while the preceding one is very abundant. I could not find the type at Amsterdam, probably destroyed or lost.

BEZZI has placed this and the preceding species in the genus *Acidia*, but I think the both must be replaced in the genus *Pseudospheniscus*, having no distinct propleural bristle.

53. *Pseudospheniscus inflatus*, sp. nov.

(Fig. 37; Pl. IV, fig. 4)

Black species of rather small-sized : Very near to *superfluctus* ENDERLEIN, but easily distinguished by a large hyaline spot in the 2nd



costal cell, the swollen hind head and the broad frons; this is also somewhat allied to *Philophylla heraclei* LINNAEUS, but differs in the wing-venation, the 2nd indentation of the costal margin of wings, the distinctly tomentose thorax, and the position of dorsocentral bristles.

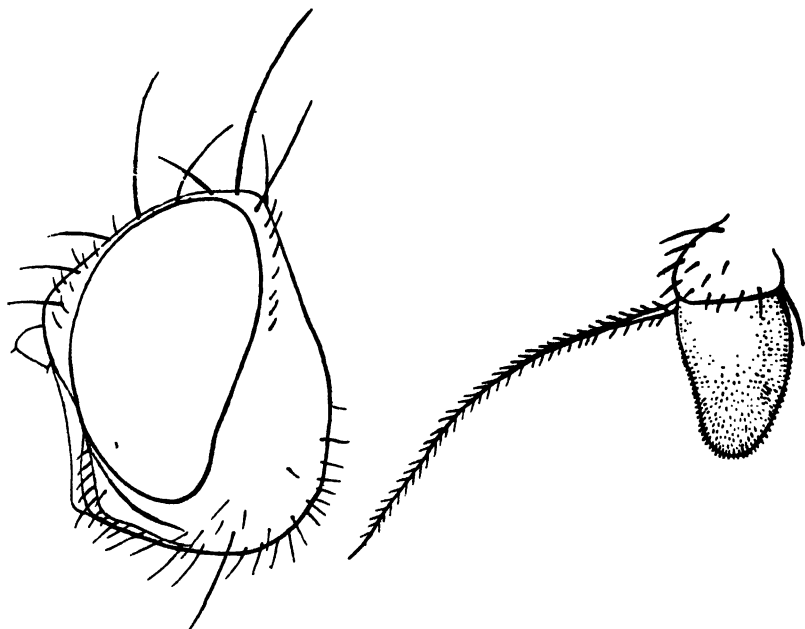


Fig. 37.

*Pseudospheniscus inflatus*, sp. nov. ♀, × ca 35. Right antenna, × ca 60.

♂ ♀. Head entirely dirty reddish yellow; frons as wide as the eye or about  $1\frac{1}{2}$  times as long as wide, scarcely yellowish pubescent; lunula reddish brown, almost always non-tomentose; vertex with a distinct black ocellar triangle; vertical calli very long, shining. Face somewhat greyish; eye-margins ochraceous, in the middle very slightly narrowed; cheeks rather broad, with the genal groove very faint, but with very sharp vibrissal edge which extends upwards behind the back of the head and is furnished with many short black bristly hairs; genal bristle long but not strong. Back of the head moderately swollen below as in the genus *Philophylla*. Antennae orange yellow; 3rd joint narrowed towards the narrowly rounded tip, its upper margin very slightly con-

cave and its lower margin strongly convex; 2nd joint conspicuously black-bristled above, with a long black median seta which is shorter than the joint; arista longer than antenna, black with the base yellowish as in the other species, black pubescent. Palpi reddish yellow, furnished with rather long black bristles.

Thorax distinctly yellowish tomentose, without any stripes, with the pleurae strongly shining; humeral calli, prothorax, pteropleura, and the sides and under surface of scutellum reddish yellow or reddish brown; dorso-central bristles just behind the line connected each of the anterior supra-alar bristles; apical pair of scutellar bristles strong but shorter than the basal pair, crossing apically.

Abdomen shining piceous, black pubescent and bristled; 6th tergite of female a little shorter than the preceding segment; basal joint of ovipositor a little longer than the 6th tergite or about  $1\frac{1}{2}$  times as broad as long, shining black, the remaining joints being yellow; male genitalia yellowish, with the narrow ventral appendage, the latter is yellowish and possesses two very short apical hooks.

Wings moderate in size, the apex being narrowly rounded, fuscous, with the extreme base and Cu hyaline. The six hyaline indentations of which 5 are disposed as in *superfluctus*, ENDERLEIN, but 3 apical ones are more or less curved at their tip and the basal oblique stripe is narrowed towards the wing margin; the remaining one is placed in the 2nd costal cell and is narrowly extending towards the tip of the basal oblique stripe.

Legs light yellow, with two pairs of posterior femora blackish, and with the hind tibiae brownish; pubescence and bristles black.

Chaetotaxy strong and long, black.

Length: Body 4-5 mm ( $\sigma$  ♀); wings 4.5-5.2 mm ( $\sigma$  ♀).

Hab. Saghalien—Tomarikishi (VII), Kaibato (VII).

Hokkaido—Toikanbetsu (VII).

Types in the Entomological Museum of Government Research Institute, Taihoku, Formosa.

It may be probable that the present species belongs to the genus *Philophylla* RONDANI or *Prospheniscus* SHIRAKI, but I took it in this

genus, because it differs from the former in the shape of pterostigma and in the position of dorso-central bristle, and from the latter in the strong ocellar bristles and in the position of dorso-central bristles and of the antennal insertion.

### XXIII. Genus **PROSPHENISCUS**, nov.

Allied to *Pseudospheniscus*, *Calosphenisca* and *Spheniscomyia*, but easily distinguished from the former by the position of antennal insertion, the strongly swollen lower half of hind head and the very short rather indistinct ocellar bristle; from the second by very strong chaetotaxy of head, the very short not sharply pointed stigma and no yellow pleural spot; from the latter by three pairs of lower fronto-orbital bristles, the well-pubescent arista and the well-bristled r. s.

Head as wide as thorax, or as high as broad; frons slightly convex, but conspicuously concave just before the ocellar triangle, a little broader than the eye, very slightly widened forwards; lunula distinct, but small; vertex rather convex, very indistinctly carinate, with long inwardly curved vertical calli; face rather long, moderately widened below, in profile nearly straight, with the upper mouth-edge not reflexed; antennal grooves very distinct and broad, reaching the mouth-edge; eye-margins narrow, nearly the same in width throughout the whole length; back of the head rather flattened above, and strongly swollen beneath but could not be seen from front; cheeks moderately produced below, about  $\frac{1}{4}$  as high as the eye, with distinct broad genal groove; bristles of the vibrissal edge distinct but very short. Antennae inserted at just below the middle of eyes, broad, hardly reaching to the upper mouth-edge; 3rd joint about twice as long as wide, its upper margin straight and its lower margin strongly curved, with more or less pointed tip; arista short pubescent. Palpi narrow, strongly curved upwards, rounded at the tip. Eyes when seen from side rather narrow; the posterior margin nearly straight but the upper third distinctly convex; the anterior margin evenly rounded; the upper and lower angles more or less pointed.

Mesonotum longer than wide, convex above, black, excepting the

humeral calli, prothorax and lateral sides of scutellum reddish yellow; scutellum rather small, flattened above, subtriangular.

Abdomen not narrower than or about as long as the thorax; 6th tergite of female a little shorter than the 5th; basal joint of ovipositor very small, broader than long, as long as the 6th tergite, rather long pubescent.

Wings comparatively long, moderate in width, blackish with hyaline spots along the anterior and posterior margins, a narrow curved transverse band near the apical margin; marginal spine very short; stigma about  $\frac{1}{2}$  as long as the second costal cell, moderately pointed;  $1M_2$  moderate in length, with somewhat pointed lower angle; anal cell drawn out into a short pointed lower angle;  $r_{2+3}$  very slightly undulate in the middle;  $r_{4+5}$  distinctly but rather sparsely bristled on the basal  $\frac{2}{3}$ , on the under side there is no bristle; r-m perpendicular, distinctly after the middle of  $1M_2$  but not very near to m-cu, the latter being perpendicular.

Legs rather strong; middle tibiae with a strong apical spur; posterior tibiae with a row of bristles on the externo-posterior margin.

Chaetotaxy complete: Fronto-orbital bristles 2:3; ocellar bristles very short; inner vertical bristles very long and about twice as long as the outer one; postvertical bristles rather long; genal bristle 1, moderate in length; dorso-central bristles at just before the line connecting the anterior supra-alar bristles; mesopleural bristles two; scutellar bristles 4; propleural bristle wanting.

Genotype: *Prospheiscus miyakei*, sp. nov.

#### 54. *Prospheiscus miyakei*, sp. nov.

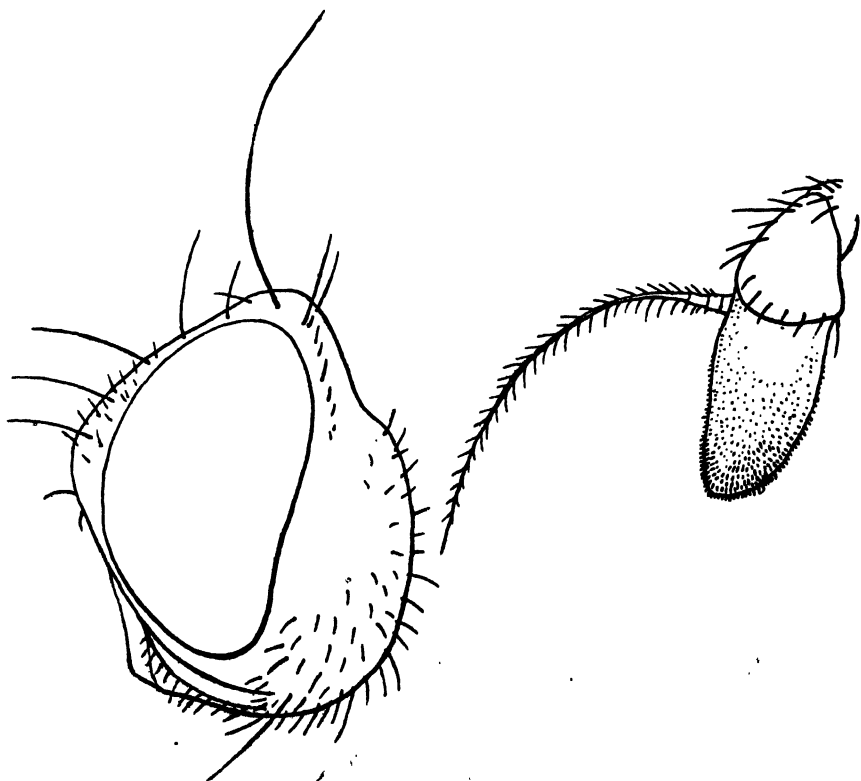
(Fig. 38; Pl. IV, fig. 5)

♀. Black, with the head yellowish, medium-sized species. Frons reddish yellow, furnished with a very few black hairs, towards the sides not distinctly tomentose; vertex with a small black dot between three ocelli; vertical calli shining; face ochraceous, but the upper border somewhat whitish tomentose, the eye-margins not dusted; cheeks in

colour similar to the face, the bristles black; back of the head ochraceous, but the upper portion especially in the middle whitish tomentose, with some black hairs. Antennae reddish yellow; 3rd joint about  $1\frac{1}{2}$  times as long as wide, with rather short black arista which is black pubescent; 2nd joint furnished with some short black bristles. Palpi reddish yellow, furnished with some rather long black bristles.

Thorax somewhat greyish tomentose, with 3 very fine inconspicuous non-tomentose stripes which are not reaching the posterior margin; scutellum with a very long blackish spot, from which it is nearly occupied all over the dorsum.

Abdomen fusco-testaceous, strongly shining, covered by rather numerous short greyish hairs and furnished with some short black



(Fig. 38)

*Prosphegiscus miyakei*, sp. nov. ♀, × ca 35. Right antenna, × ca 60.

bristly hairs on the posterior margin of each tergite; ovipositor shining black, with two small apical joints yellowish.

Wings blackish brown, with the base and the axillary cell hyaline but the latter being somewhat brownish about the middle of the first axillary cell, this colour being continued from the anal streak. Wing-pattern as follows: A transverse-quadrate spot in the second costal cell large; two indentations approached together in the middle of the fore border, just after the stigma, they are of triangular shape and narrowly extending into  $R_s$ , of which the first spot is longer and reaching to  $r_{4+5}$ ; an apical cross streak from behind the tip of  $r_{2+3}$  to the tip of  $m$ , narrow and parallel to the apical margin. The other three indentations are placed at the posterior margin; the first one near the base of  $IIM_2$ , somewhat large triangular one; the second very near to the former, extending from the apical border of  $IM_2$  to the apical portion of  $Cu$ , somewhat broadened posteriorly; the third one, from the anterior corner of the anal cell to the tip of the anal vein, a little narrower than the second. The other 4 very small dots are disposed as follows: Two rounded ones in  $R_s$ , near the tips of two indentations of posterior margin; one very minute dot in the middle of  $R$ ; the remaining placed on the base of  $r_1$  and extending posteriorly to near the base of  $m$ .

Legs yellowish, with two pairs of posterior femora and hind tibiae blackish.

All the bristles black, long but of the head rather short excepting of the interior vertical bristles.

Length: Body 5.5 mm; wings 6 mm.

Only one female collected by Mr. K. Miyake at Muscha (VI), preserved in the Entomological Museum of Government Research Institute, Taihoku, Formosa.

#### XXIV. Genus NEANOMOEIA, HENDEL

Wien. Ent. Zeit. XXXIII., p. 84 (1914); Ann. Mus. Nat. Hung. XIII., p. 454 (1915).

Head wider than or as wide as thorax, less higher than broad; frons as wide as eye, parallel-sided; face rather narrow, in profile nearly

straight but the upper mouth-edge more or less reflexed; antennal grooves broad but shallow, distinctly extending below to the mouth-edge; genal groove distinct, rather broad below the lower angle of eye; back of the head moderately swollen on the lower half; cheeks moderately swollen; vertex distinctly carinate transversely, with the narrow moderate long vertical calli; antennae inserted in the middle of eyes, distinctly shorter than face, the 3rd joint rounded at the tip, the arista short-pubescent, the median seta of the 2nd joint very long; palpi not broad, curved upwards, the tip rounded and rather long-bristled; eyes oval, the posterior margin moderately convex, the lower angle broadly rounded, the upper angle rather narrowly rounded.

Thorax distinctly longer than wide, the disc distinctly tomentose and with 3 very narrow indistinct dark longitudinal stripes, the latter being sometimes nearly disappeared; scutellum rather flattened above, subtriangular, longer than half the width; pleurae distinctly light coloured, with a narrow whitish longitudinal streak along the whole length of upper margin, this streak often wanting.

Abdomen distinctly shorter than thorax; 6th tergite of female rather large, a little shorter than the 5th; the basal joint of ovipositor depressed, about as long as the 5th tergite, furnished with a few long bristles only on the lower apical margin; 5th tergite of the both sexes furnished with some long bristles on the posterior margin; male-genitalia with very long ventral appendage.

Wings long and broad, but of *farinosa* HENDEL rather narrow; stigma comparatively long triangular, always pointed and about  $\frac{2}{3}$  as long as the second costal cell; the upper angle of  $IM_2$  nearly or certainly right angled, while the lower angle is less than  $90^\circ$ ; anal cell drawn out into a long point, as long as  $M$ ;  $r_{2+3}$  very slightly waved;  $r_{4+5}$  very sparsely and very indistinctly bristled on the basal half of the upper side, its apical half parallel with  $m$ ;  $r-m$  straight, placed very near to  $m-cu$ , the latter being slightly oblique or perpendicular; wing-pattern consisting of a blackish or brownish large basal spot extending to  $r-m$  and of two divergent narrow blackish streaks on the apical half of wing.

Legs moderate in length, one spur of middle tibiae moderately long and strong.

Chaetotaxy complete as in the following genus; dorso-central bristles distinctly behind the anterior supra-alar bristles or on the line connecting the latter.

Genotype — *Neanomoea approximata*, HENDEL.

**Key to the species hitherto known in the world.**

1. Pleurae with a distinct greyish white longitudinal upper streak; m-cu perpendicular.
  2. Mesonotum reddish brown with 3 distinct blackish stripes; the basal spot of wings connected with apical streaks ..... *rufescens*, HENDEL
  22. Mesonotum black, the stripes very indistinct; the basal spot of wings not united with apical divergent streaks..... *farinosa*, HENDEL
11. Pleurae without greyish streak; m-cu oblique so that the lower angle of  $1M_2$  somewhat pointed, basal spot of wings connected with apical streaks .....  
..... *approximata*, HENDEL.

**55. *Neanomoea approximata*, HENDEL.**

Ann. Mus. Nat. Hung. XIII., p. 455, pl. VIII, fig. 9, 1915.

♂. Head entirely reddish yellow, with a very small ocellar triangle black; frons flat, in profile straight and as long as face, furnished with a very sparse black pubescence, the margins slightly whitish tomentose; lunula whitish tomentose; vertical calli shining, yellow, about  $\frac{1}{3}$  as long as the vertical width; face light coloured, more or less greyish, the eye-margins narrow; cheeks about as wide as  $\frac{1}{6}$  the height of eye, with rather less carinate vibrissal edge, where is furnished with many short black bristly hairs; the genal bristle moderate in length. Antennae reddish yellow; 3rd joint with the both sides nearly straight, the tip being narrowly rounded, more than twice as long as wide; arista conspicuously longer than the antenna, black, very shortly black pubescent; 2nd joint as long as wide, furnished with a very short black bristles, the median seta as long as the joint. Palpi rather strongly curved upwards, the tip and lower margin furnished with a few rather long black bristles.



Thorax fusco-testaceous, distinctly dusted with a greyish tomentum; the lateral margins, pleurae and scutellum shining pale reddish brown; metanotum strongly shining castaneous; apical scutellar bristles a little shorter than the basal pair, usually slightly divergent.

Abdomen dark castaneous, black pubescent and bristled; male-genitalia light yellow, with the ventral plate dark castaneous, the latter furnished with two approached strong hooks on the tip.

Wings on the basal half fusco-testaceous, excepting the first costal cell and the axillary cell, as well as two markings hyaline, one costal indentation of the latter is placed in the second costal cell and is narrowly extending to the base of  $R_3$ , and the other is placed nearly along outside of anal vein, this oblique hyaline band being narrowed apically and constricted at near the anterior tip, very finely extended to the posterior end of the costal indentation; the apical half hyaline, its basal margin concave, from the tip of stigma near to the end of the oblique hyaline band over r-m, from where three narrow blackish stripes are radiated, one of which is running nearly straight to the anterior margin, the 2nd one, arcuate, reaches to the end of  $r_{2+3}$ , and from here along the costa to the apex of the wings, ending at the end of m, the remaining one, on m-cu, is reaching the posterior margin. Halteres light yellow.

Legs yellowish, with two pairs of posterior femora and the hind tibiae blackish, black pubescent and bristled.

Length: Body 5-6 mm; wings 5.7-6.6 mm.

Hab. Formosa—Toyenmongai, Kosempo (V), Arisan (X), Taito (III).

Type in the National Museum of Hungary, Budapest.

#### 56. *Neanomoea rufescens*, HENDEL.

Ann. Mus. Nat. Hung. XIII., p. 456, pl. VIII, fig. 10 (1915).

Smaller than the preceding species; easily distinguished by the coloration, the smaller third antennal joint and the less oblique m-cu.

♂ ♀. Head yellow; frons very slightly dusted with a whitish tomentum; vertical calli inconspicuous; back of the head less convex.

Antennae light yellow; 3rd joint very short, about  $1\frac{1}{2}$  times as long as wide.

Mesonotum pale yellowish red or pale reddish brown, whitish tomentose, with 3 narrow rather distinct blackish stripes and a pair of broad ill-defined dark lateral stripes, the former not reaching the hind margin; pleurae very shining yellow, with a well-defined white tomentose upper marginal stripe; scutellum pale reddish brown, distinctly flattened above.

Abdomen castaneous, in the female nearly as long as thorax; ovipositor very short, flattened, about as long as the 6th tergite or about  $1\frac{1}{2}$  times as wide as long, dark castaneous, furnished with a very few black bristly hairs at the tip; male-genitalia entirely yellow.

Wings as in *approximata*, but m-cu straight and less oblique (in *approximata* outwardly curved and strongly oblique); costal cell pale yellowish brown, in the apical portion with a long subtriangular hyaline indentation which is not extending hindwards; the oblique hyaline band along the anal vein wanting; two very small hyaline dots in the middle of wing, of which one is placed in R along m and the other in Cu, but the latter being often wanted; the apical middle stripe nearly angulated at the tip of  $r_{2+3}$ , reaching the middle of the mouth of  $R_5$ . Halteres pale reddish yellow.

Legs entirely yellowish.

Length: Body 4.8-5.2 mm (♂ ♀); wings 5-5.2 mm (♂ ♀).

Hab. Formosa—Sokutsu (IV); Koshun (VI); Kankau (VI); Toroku (III) Taichu (XII).

Types in the National Museum of Hungary, Budapest. The flies are often captured on the flowers of *Tetrapanax papyrifera* KOCH.

#### 57. *Neanomoea farinosa*, HENDEL.

Ann. Mus. Nat. Hung. XIII., p. 455, pl. VIII, fig. 8 (1915).

Medium-sized species, of blackish colour; distinguished by the wing-markings which are very similar to *Pseudospheniscus alboscuteclatus* v. D. WULP, as well as by the position of the dorso-central bristles.

♀. Head nearly as broad as thorax, as in *rufescens* HENDEL, but

all the bristles more strong and long, especially those on the cheeks much conspicuous, and the third joint of antennae longer than as in *approximata* HENDEL.

Mesonotum comparatively long, black, dusted with a whitish tomentum, and without stripes; prothorax, the lateral sides from the humeral calli to the lateral bases of scutellum, pleurae, and the margins and underside of scutellum, reddish yellow; on the upper margin of pleurae there is a well-defined greyish longitudinal band.

Abdomen strongly shining, black, black pubescent and bristled; 6th tergite a little shorter than the 5th; basal joint of ovipositor as long as the 5th tergite, strongly shining black (the apical joints are yellowish), the under surface furnished with numerous short black hairs and on its apical margin a few long bristly hairs.

Wings long, distinctly  $2\frac{1}{2}$  times as long as wide; r-m not very near to m-cu, a little longer than the apical division of the anterior margin of  $1M_2$ ; wing-pattern as in *Pseudospheniscus alboscuteatus*, but the second costal cell with an oblique black median cross-band, R with a small hyaline dot in the middle of its posterior margin, and Cu with two hyaline indentations on its basal half. Halteres light yellow.

Legs orange-yellow, two pairs of posterior femora with a very ill-defined brown dorsal stripe which is not reaching to the base.

Length: Body 6-6.2 mm; wings 6.5-7 mm.

Hab. Formosa - Shu-Shu (I), Hozan (VII VIII), Asahi (V), Taichu (XII).

Type in the National Museum of Hungary, Budapest. The flies gather on the flowers of *Tetrapanax papyrifera* KOCH.

## XXV. Genus **PHAGOCARPUS**, RONDANI.

Bull. Soc. Entom. Ital. III., p. 171 (1871).

*Anomoia*, WALKER, Ent. Mag. III., p. 80 (1836), Praeocc. by CHEVROLAT, in *Coleoptera* 1834.

Head a little broader than high or nearly as broad as thorax; frons a little broader than eye, parallel-sided or a little narrowed below; vertex keeled transversely; lunula distinct but not broad; face rather

broad, very slightly concave, with a distinct transverse furrow just above the upper mouth-edge which is more or less reflexed; antennal grooves broad, extending to the mouth-edge; genal grooves indistinct; back of the head slightly concave on the upper half but the lower half moderately swollen; cheeks linear; eyes about  $1\frac{1}{2}$  times as long as broad, the anterior margin right-angularly rounded, the posterior margin moderately convex, the upper angle narrowly rounded and the lower one broadly; antennae inserted in the middle of eyes, hardly reaching to the upper mouth-edge, the 3rd joint rounded at the tip, its arista short-pubescent, the median seta of the 2nd joint distinct; palpi narrow but not long, rounded at the tip and furnished with a few distinct bristles.

Thorax rather short, but distinctly longer than wide, moderately convex above; mesonotum brownish or blackish, distinctly obscured with a greyish tomentum, with or without 3 very narrow dark longitudinal stripes; pleurae distinctly paler than mesonotum, without any distinct stripe or spot; scutellum subtriangular, flattened above.

Abdomen as long as thorax, but broader; the last tergite furnished with a few long bristles; 5th tergite of male long; 6th tergite of female about half as long as the preceding one; basal joint of ovipositor trapezoidal, wider than long, a little longer than the 6th tergite, depressed; hypopygium small, the ventral plate of genitalia narrow and long.

Wings large, with a large yellowish or brownish or blackish basal patch and two narrow blackish or brownish divergent apical streaks; stigma very small, subquadrate, not pointed, shorter than a half of the 2nd costal cell; anal cell drawn out into a long point, as long as M; r-m placed on very near to m-cu, the latter being strongly oblique;  $1M_2$  is therefore short above and long below, its lower angle being very pointed;  $r_{2+3}$  not undulate;  $r_{4+5}$  very indistinctly bristled on the upper basal portion or nearly throughout, nearly parallel with m at the apical half.

Legs moderate in size. Chaetotaxy complete; ocellar bristles short and weak, parallel; postvertical strong, parallel; fronto-orbital bristles

2:3; genal bristle one, strong; bristles of the occipital row well-developed; scapular bristles well-developed; dorso-central bristles near to the scutellum; mesopleural bristles 2; pteropleural comparatively weak; scutellar bristles 4. All the bristles black.

Genotype: *Musca purmundus*, HARRIS.

Key to the species known to me.

1. Third antennal joint of male about 2½ times as long as wide;  $r_{4+5}$  bristly on the basal portion.
  2. Second costal cell brown or blackish, with a hyaline indentation; R without hyaline dot; m-cu strongly oblique and slightly curved outwards.....  
..... *purmundus*, HARRIS.
  22. Second costal cell hyaline, with the base yellowish or pale brownish; m-cu less oblique and uniformly curved outwards; R with a distinct hyaline dot.  
..... *formosanus*, sp. nov.
11. Third antennal joint of male only twice as long as wide; second costal cell hyaline, with the base yellowish or pale brownish.
  2.  $r_{4+5}$  bristly on the basal portion.
    3. Basal patch of wings never united with two divergent apical streaks; r-m a little shorter than the apical division of anterior margin of  $1M_2$ ; m-cu strongly oblique and slightly curved outwards; R with a hyaline dot.....  
..... *immsi*, BEZZI.
    33. Basal patch of wings united with the apical streaks; r-m not shorter than the apical division of anterior margin of  $1M_2$ ; m-cu less oblique and slightly curved outwards; R and  $1M_2$  with a hyaline dot.....  
..... *connexus*, sp. nov.
  22.  $r_{4+5}$  bristly nearly throughout the whole length; basal patch of wings never united with the apical streaks; r-m a little shorter than the apical division of anterior margin of  $1M_2$ ; m-cu strongly oblique and slightly curved outwards; R with a hyaline dot ..... *vulgaris*, sp. nov.

58. *Phagocarpus purmundus*, HARRIS.

Expos. Engl. Ins., p. 74, pl. XXI, fig. 6 (1776).

*Trypeta antica*, WIEDEMANN, Aussereurop. zweifl. Ins. II., p. 511 (1830).

*Trypeta gaedii*, MEIGEN, Syst. Besch. Zweifl. Ins. VI., p. 382 (1830).

*Tephritis zetterstedtii*, ZETTERSTEDT, Ins. Lapponica, p. 746 (1838).

*Tephritis oxyacanthae*, PERRIS, Ann. Soc. Ent. France, XVI., p. 211 (1876).

This is one of common species in Japan, easily distinguished from the others of *Phagocarpus* by long 3rd joint of antennae of male, as well

as by brown or blackish second costal cell in which there is a distinct hyaline median indentation.

♂ ♀. Head ochraceous; frons sparsely brown-pubescent, the margins whitish tomentose; lunula whitish tomentose, with the posterior margin distinctly brown; vertical calli brownish; ocellar triangle blackish; face whitish dusted; back of the head more or less brownish on the upper part, while the lower half very pale yellowish; cheeks with brown bristly hairs and one similarly coloured genal bristle. Antennae pale yellowish; 3rd joint somewhat brown-margined, of the male  $2\frac{1}{2}$  times as long as wide and the both sides nearly straight, of the female distinctly narrowed apically. Palpi pale yellow, furnished with a few blackish bristles.

Mesonotum brownish to blackish, conspicuously dusted with a grey tomentum, without distinct stripes, but when seen from behind there are three non-tomentose stripes of which the median one is broad and much inconspicuous; humeri, notopleurae and pleurae reddish yellow; mesophragma strongly shining, dark castaneous to black; scutellum yellow to reddish yellow.

Abdomen shining brown to black; 2nd-4th tergites with a rather distinct broad white-tomentose posterior marginal band; pubescence dark brown, bristles black; 6th tergite of female about half as long as the preceding one; ovipositor shining, yellowish brown to blackish castaneous, its basal joint a little narrowed apically and distinctly shorter than two preceding tergites together.

Wing-veins mainly yellowish, but blackish on the blackish portions of the pattern; basal patch brown to black, extending a little beyond r-m, but the axillary cell and allulae entirely hyaline, the costal border with three indentations of which the apical one is very large and triangle and reaches to  $r_{4+5}$ , left a narrow straight outer marginal streak, and the middle one is very small and is placed on the tip of costal cell, while the basal one stands in the middle of the second costal cell. Hind border of the basal patch almost always paler, with three hyaline spots; one apical spot very large, transverse the middle of Cu leaving a narrow straight streak which is parallel with r-m and is reaching the

posterior wing-margin just after the tip of An, this streak often wanting; one small round dot at just after the anterior corner of the anal cell, along the cubital vein; the remaining one inconspicuous, yellowish, on the anterior margin of the prolongation of posterior angle of the anal cell,  $r_{4+5}$  bristled only on the basal portion; r-m a little shorter than the apical division of the anterior margin of  $1M_2$ , slightly concave; m-cu strongly oblique. Two apical streaks brown to blackish, the anterior one longer, arcuate, begins at the base of  $R_5$  and follows the end of  $r_{2+3}$ , and from here along the costa to the apex of the wings, ending a little after the end of  $r_{4+5}$ ; the other shorter, on m-cu, straight, reaching the hind margin. Halteres pale yellow to pale reddish yellow, the tip usually darkened.

Legs orange yellow, black pubescent and bristled.

Length: Body 4-5 mm ( $\delta$  ♀); wings 4.5-5.5 mm ( $\delta$  ♀).

Hab. Japan—Kyoto, Tokusa (VII), Tanba (VII).

China; Europe.

In Europe the larvae are found in the fruits of *Crataegus oxyacantha* and of *Cotoneaster tomentosa*.

# 59. *Phagocarpus formosanus*, sp. nov.

(Fig. 39; Pl. IV, fig. 6)

Very near to *immsi* BEZZI, but may be distinguished by less oblique m-cu, as well as by distinctly undulate  $r_{2+3}$ ; also allied to the preceding species, differing in the following characters:

$\delta$  ♀. Large. Ocellar bristles comparatively long, but shorter than the upper superior fronto-orbital bristles, always distinctly divergent, while in *purmundus* they are almost always parallel; postvertical bristles comparatively far apart from each other, never pale-coloured. Palpi comparatively large, always extending beyond the upper mouth edge, in *purmundus* only reaching that. Three non-tomentose stripes of mesonotum rather distinct, the median one being not broader than the lateral pair. Abdomen distinctly paler on two basal tergites; 2nd-4th tergites with rather narrow reddish yellow posterior marginal band; 6th tergite

of female a little shorter than the preceding; basal joint of ovipositor strongly narrowed apically, about as long as two preceding tergites together. Wings with dark brown to blackish basal patch, leaving the extreme base and the 2nd costal cell hyaline, the latter yellowish brown to brown at the base;  $R_1$  with a longitudinal basal streak hyaline; R

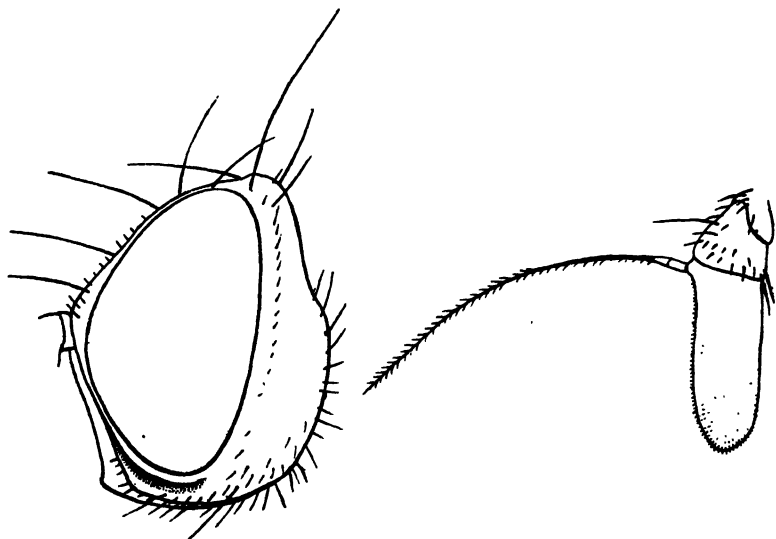


Fig. 39.

*Phagocarpus formosanus*, sp. nov. ♀,  $\times$  ca 23. Right antenna,  $\times$  ca 35.

with a small hyaline dot just after the middle, along m; three spots in Cu, of which the middle and apical spots are united posteriorly from each other, the apical streak being broad and strongly widened towards the base, and the yellowish spot is very faint; two apical streaks connected each other in  $R_{5+6}$ , but conspicuously apart from the tip of basal patch, the anterior longer one more strongly curved and extending to the middle of the mouth of  $R_{5+6}$ , the posterior shorter one less oblique;  $r_{4+5}$  more curved; m-cu less oblique, but much convex. Bristles on the externo-inferior margin of front femora much numerous.

Length: Body 5.5–7 mm ( $\delta$  ♀); wings 6–7.2 mm ( $\delta$  ♀).

Hab. Formosa – Arisan (X), Horisha (III).

Types in the Entomological Museum of Government Research Institute, Taihoku, Formosa.



60. *Phagocarpus connexus*, sp. nov.

(Fig. 40; Pl. V, fig. 1)

Closely allied to *immsi* BEZZI, but easily distinguished from that by comparatively long r-m, as well as by two apical streaks of wing, which are connected with the basal patch.

♂. Yellowish species, of rather large-sized. Head entirely yellow; frons distinctly broader than the eye, more or less widened forwards, very slightly dusted with a whitish tomentum and very sparsely covered

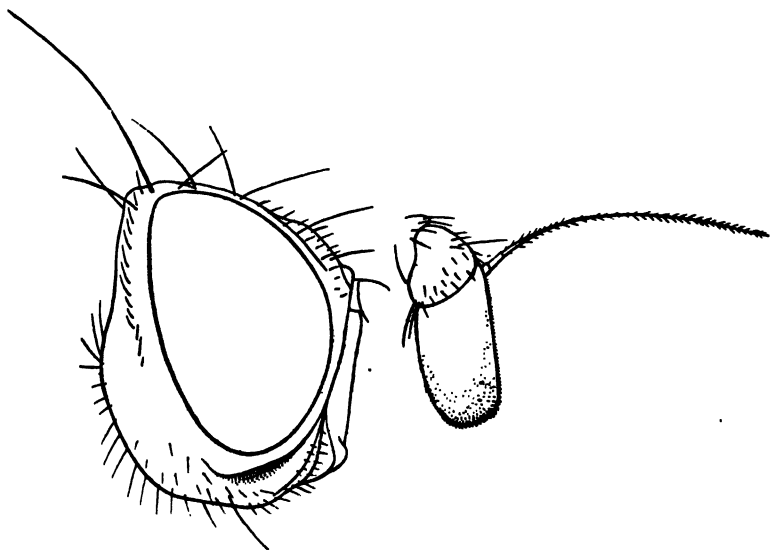


Fig. 40.

*Phagocarpus connexus*, sp. nov. ♀,  $\times$  ca 25. Left antenna,  $\times$  ca 32.

with a black pubescence; lunula yellowish white, with a narrow dark brown upper marginal streak; vertex with an ocellar triangle brown, the transverse carina being not conspicuous, while the vertical calli are rather broad; face greyish, with the eye-margins yellow; back of the head entirely yellow, more or less whitish tomentose, on the lower half with a few black pubescence; cheeks rather long; the vibrissal edge furnished with rather numerous but short black bristles. Antennae reddish yellow; 3rd joint about twice as long as wide, very slightly narrowed apically; arista inconspicuously pubescent. Palpi yellowish

white, with the tip yellow, very slightly curved and furnished with a few short black bristly hairs, hardly reaching the upper mouth-edge; proboscis somewhat darker; ocellar bristles short and parallel, post-vertical bristles fine and moderately apart from each other.

Thorax entirely yellow, the notum slightly covered with a whitish tomentum and furnished with numerous short black hairs, when seen from behind there is a pair of dark submedian stripes, which are very faint and not reaching the posterior margin; pleurae moderately shining, with a very narrow blackish stripe along the upper margin; scutellum yellow; all the bristles black, the apical scutellar bristles rather long and convergent.

Abdomen shining brownish yellow, black pubescent and bristled, 2nd-4th tergites with a narrow whitish tomentose posterior marginal band, but the band on the 4th is inconspicuous; genitalia yellowish, rather conspicuous.

Wings moderate in size; basal patch blackish brown, but the first costal cell, the apical  $\frac{3}{4}$  of the second costal cell, the axillary cell and the alulae hyaline, and the base of R, the anal cell, the base of Cu and the basal third of  $1M_2$  yellowish; apical indentation of the basal patch triangular, reaching the anterior corner of R; hyaline spot in Cu only one, very large, leaving the yellowish base and a narrow apical brown streak, the latter is very slightly curved and is very narrowly extending to the base of Cu, along the cubital vein; apical margin of the basal patch straight in  $1M_2$ . In the basal patch there are 4 other hyaline spots as follows: A very small dot in R, a larger longitudinal spot in the yellowish portion of  $1M_2$ , a narrow longitudinal streak at the base of  $R_1$ , and an ill-defined streak in the anal cell. Two apical streaks connected with the basal patch at after r-m, the longer one reaching the middle of the mouth of  $R_2$ . Stigma about  $\frac{1}{3}$  as long as the second costal cell;  $r_{2+3}$  nearly straight;  $R_2$  broadest in the middle; r-m as long as the apical division of the anterior margin of  $1M_2$ ; m-cu less oblique;  $r_{4+5}$  bristly only on the basal portion. Halteres pale yellow, with the knob blackish.

Legs yellow, black pubescent; bristles of front femora rather few.

Length: Body 6 mm; wings 6.5 mm.

A single male, collected at Kobayashi, Formosa, about 1300 m high, August 27th, 1923, by the author; preserved in the Entomological Museum of Government Research Institute, Taihoku, Formosa.

61. *Phagocarpus vulgaris*, sp. nov.

(Fig. 41; Pl. V, fig. 2)

*Phagocarpus immsi*, HENDEL (nec BEZZI), Ann. Mus. Nat. Hung. XIII., p. 456 (1915).

A reddish yellow species, of small-sized; distinctly differs from other species in  $r_{4+5}$  bristly on nearly whole length and in three very distinct blackish stripes on the back of thorax.

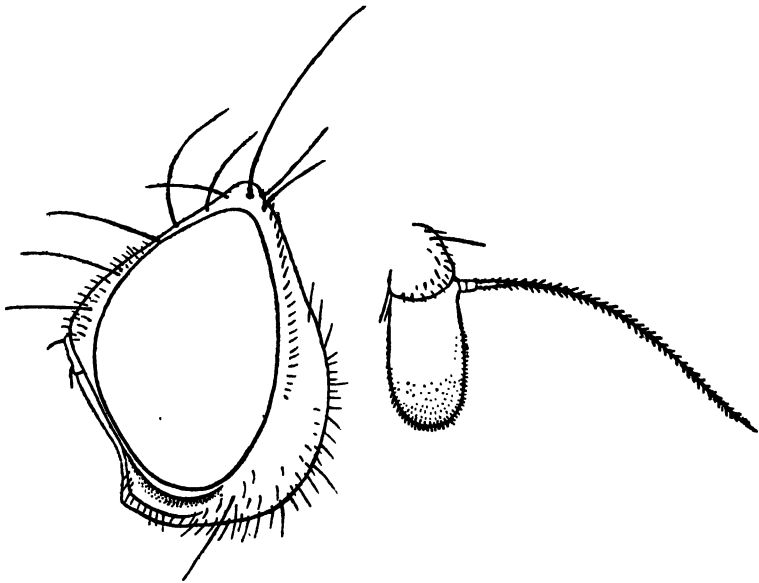


Fig. 41.

*Phagocarpus vulgaris*, sp. nov. ♀,  $\times$  ca 32. Left antenna,  $\times$  ca 40.

♂ ♀. Head entirely ochraceous, covered with a whitish tomentum, but in the back of the head very slightly. Frons very sparsely black-pubescent, of the male little narrower than the eye; lunula paler than frons, conspicuously covered with a white tomentum, with brown margin; vertex with a rather indistinct blackish ocellar triangle; vertical calli

comparatively long; face entirely white dusted; cheeks rather short, the vibrissal edge furnished with numerous black bristles which are comparatively long; back of the head with a very few blackish pubescence. Antennae yellowish; 3rd joint of male broad, distinctly narrowed apically, distinctly shorter than twice the width; arista very shortly pubescent. Palpi pale yellow, narrowed apically, moderately curved, furnished with rather numerous black bristles; proboscis somewhat darker. Ocellar bristles very slightly divergent, distinctly shorter than the postvertical or upper superior fronto-orbital bristles.

Thorax entirely pale reddish yellow, the notum distinctly dusted with a white tomentum and covered with a short black pubescence, with 5 narrow blackish stripes, which are not reaching the posterior margin, the middle one rarely being very faint and the lateral pair very often obsolete; pleurae with a very narrow blackish upper marginal streak; mesophragma often with a blackish median stripe.

Abdomen shining, yellow to castaneous, black pubescent and bristled, each the 3rd-6th tergites with a blackish transverse band which is broadly interrupted in the middle and is not reaching the lateral margins, these bands often obsolete, especially in the male and of which the first one more often becomes faint and much narrower than others; 6th tergite of female about half as long as the 5th; basal joint of ovipositor black, very short, a little longer than the 6th tergite; male-genitalia castaneous.

Wings comparatively broad. Basal patch blackish, but yellowish towards the base, with 6 hyaline markings as in follows: One very large indentation in the middle of the second costal cell, left the short yellowish ends; second costal indentation triangular, placed on outside the black stigma, extending to the tip of r-m and leaving a narrow apical margin; one very small dot in R, the other small one being placed in the base of  $R_1$ ; two transverse bands in the basal half of Cu, which are far apart from each other, the basal one narrower and more or less constricted in the middle. Two apical streaks and the apical margin of the basal patch as in *purmundus* HARRIS.  $r_{4+5}$  distinctly bristled nearly throughout the whole length, only leaving on short apical portion; r-m

shorter than the apical division of the anterior margin of  $1M_2$ ;  $m-cu$  strongly oblique. Halteres yellowish white, with the knob more or less dirty coloured.

Legs yellowish, black pubescent and bristled, the bristles on the front femora comparatively long and sparse.

All the bristles black, comparatively long.

Length: Body 4.5–5.5 mm ( $\delta$  ♀); wings 5–6 mm ( $\delta$  ♀).

Hab. Japan—Kumamoto (IV), Tokusa (VIII), Kii (VIII), Kurama (VI).

Formosa—Hatsune (IV), Taito (III).

In formosan specimens the abdomen is rather dark and has nearly no blackish bands, and the ovipositor is longer than that in Japanese ones. This has been identified as *immsi* BEZZI by HENDEL, but quite distinct from the species of BEZZI.

Types in the Entomological Museum of Government Research Institute, Taihoku, Formosa.

## XXVI. Genus **MACHAOMYIA**, HENDEL.

Wien. Ent. Zeit. XXXIII., p. 63 (1914); Ann. Mus. Nat. Hung. XIII., p. 458 (1915).

Head as broad as thorax, or as high as wide; frons narrower than eye, or about twice as long as wide, parallel-sided; vertex not distinctly carinate behind the ocellar triangle which is large; the vertical calli comparatively large; lunula rather broad; face moderately broadened below, convex, in profile straight but suddenly produced forwards above the upper mouth-edge, antennal grooves not conspicuous but reaching the lower mouth-edge, the eye-margins very narrow; back of the head concave above and swollen beneath; cheeks rather linear, with very narrow genal groove. Antennae inserted in the middle of eyes, rather broad, not reaching the upper mouth-edge; 3rd joint about twice as long as wide, its upper margin straight, the tip being rounded. Eyes about twice as long as wide, the posterior margin moderately convex, the upper angle distinctly narrower than lower angle.

Mesonotum about  $1\frac{1}{2}$  times as long as wide, moderately convex

above, without stripe; pleurae and scutellum without spot, the latter being subtriangular and nearly flattened above.

Abdomen oval, about as long as thorax; 5th tergite a little shorter than the preceding two together, furnished with some long bristles on the apical margin.

Wings broad, with a very short marginal spine and with a distinct pointed lobe at the tip of anal vein; stigma large, pointed;  $1M_2$  long and rather narrow, with the lower angle not pointed; anal cell drawn out into a rather short pointed lower angle, about as long as  $M$ ;  $r_{2+3}$  nearly straight;  $r_{4+5}$  very slightly curved downwards in the apical half, very sparsely bristled throughout the whole length of upper side, but the underside entirely not bristled;  $m$  strongly curved at the apical portion, it is therefore not parallel with  $r_{4+5}$ ; anal vein rudiment at the apical half;  $r-m$  a little after middle of  $1M_2$ , distinctly oblique;  $m-cu$  slightly S-like curved; on the middle of  $Cu$  with a distinct trace of longitudinal vein, the latter is reaching the wing margin but hardly to the second basal cell; axillary vein also rather distinct.

Legs moderate in length and thickness; the spur of middle tibiae very strong.

Chaetotaxy complete: Ocellar bristles weak; inner vertical bristles very strong, longer than outer one; post-vertical bristles weak; fronto-orbital bristles 2:3; occipital row composed of numerous bristles; genal bristle 1, strong; dorso-central bristles far apart from the line connected the anterior supra-alar bristles; mesopleural bristles 2; propleural bristle wanting; scutellar bristles 4; all the bristles black.

Genotype: *Machaomyia caudata*, HENDEL.

At the present time only one species from the world known.

## 62. *Machaomyia caudata*, HENDEL

Ann. Mus. Nat. Hung. XIII., p. 458, pl. IX, fig. 16 (1915).

♂. Reddish yellow species, of small-sized. Head pale orange-yellow, slightly dusted with a white tomentum; frons covered with rather numerous blackish pubescence, the eye-margins and the upper

margin of lunula very indistinctly rose-coloured; vertex with a small ill-defined black ocellar dot; vertical calli narrow and about as long as the width of vertex; back of the head furnished with a few blackish pubescence; vibrissal edge furnished with many rather long black bristly hairs. Antennae light yellow; 3rd joint carinate on the upper and apical margins; arista black, with the base yellow, very shortly pubescent; median seta of the second joint black, shorter than the apical width of the latter.

Thorax pale reddish yellow pubescent, with the pleurae somewhat paler; mesonotum, scutellum, mesophragma and hypopleura very finely dotted with blackish brown colour.

Abdomen reddish yellow, with two apical tergites and genitalia blackish, black pubescent, furnished with a very few black bristles.

Wings dark brown, hyaline towards the base, with the stigma blackish and the second costal cell entirely hyaline. The hyaline markings as in follows: Two costal indentations, after the stigma, placed near from each other and extended to  $r_{4+5}$ , the first one being just above  $r-m$ ; one large transverse-oblong spot in  $R_s$ , nearly extending from  $r_{4+5}$  to the posterior wing-margin; one small round dot in  $R$ , placed on about the middle of the basal division of anterior margin of  $1M_2$ ; three spots in  $1M_2$ , of which the basal one is oblong, and the apical two are smaller than the former placed near  $m-cu$ , but the posterior spot extending to the wing-margin; the remaining two rather ill-defined, in the basal half of  $Cu$ , of which the basal spot is conspicuously smaller than the second one, the latter being far apart from the basal one.  $Cu$  in the posterior half hyaline, this narrowly extending to the posterior apical spot in  $1M_2$ . Halteres light yellow, with the knob being more or less darkened.

Legs light yellow, sparsely blackish pubescent; bristles of front femora long but very few.

All the bristles black; ocellar bristles distinctly shorter than post-vertical pairs, the latter being about as long as the upper superior fronto-orbital bristles; genal bristle very strong; apical scutellar bristles a little shorter than the basal pair, not divergent.

Length: Body 4-5 mm; wings 4.1-5 mm.

Hab. Formosa—Toyenmongai; Taihorin (IV).

The female is not known yet; type preserved in the National Museum of Hungary, Budapest.

## XXVII. Genus **HEMILEA**, LOEW.

Die europäischen Bohrfliegen, p. 32 (1862).

*Ocneros*, RONDANI, Bull. Soc. Ent. Ital. III., p. 180 (1871).

Head as wide as thorax, a little broader than high; frons distinctly broader than or as wide as the eye, parallel-sided; vertex more or less carinate, with comparatively long vertical calli; lunula not large, face rather slightly broadened below, rather narrow or moderately broad, in profile nearly straight or very slightly concave; back of the head rather conspicuously swollen; cheeks slightly produced below, with very narrow genal groove; the vibrissal edge furnished with a few bristles. Antennae inserted at just below the middle of eyes, not reaching to the upper mouth-edge, rather broad, about  $1\frac{1}{2}$  to 2 times as long as wide, the tip being rounded or indistinctly pointed at the upper tip; arista very short-pubescent, or bare. Palpi moderate in width, slightly curved upwards, rounded at the tip, very sparsely bristled. Eyes oval or elliptical, about  $1\frac{1}{2}$ -2 times as long as wide; the posterior margin slightly convex; the upper and lower angles moderately rounded.

Mesonotum about  $1\frac{1}{2}$  times as long as wide, moderately convex above, with or without stripes; pleurae and scutellum uniformly coloured, the latter subtriangular and more or less flattened above.

Abdomen shorter, but broader than thorax; 5th tergite of male about  $1\frac{1}{2}$  times as long as the 4th, furnished with some long bristles on the apical margin; 6th tergite of female rather long but distinctly shorter than the 5th; the basal joint of ovipositor flattened, about twice as long as the 6th tergite, or broader than long, the posterior margin of the under side furnished with a few short bristles; hypopygium small, the genitalia with moderately long ventral plate.

Wings very long, about 3 or  $2\frac{1}{2}$  times as long as wide, the costal margin nearly straight on the greater part, but the apical third



strongly curved; stigma large and pointed, but distinctly shorter than the second costal cell;  $1M_1$  very long, the apical margin straight or very slightly convex, the upper and lower angles nearly rectangular; anal cell drawn out into a short pointed lower angle, about as long as the 2nd basal cell ( $M$ );  $r_{2+3}$  and  $r_{4+5}$  nearly straight, very slightly divergent, the latter very sparsely bristled only on the upper side; r-m conspicuously after the middle of  $1M_2$ ; m-cu perpendicular or very slightly oblique; the anterior half of wings black, the rest hyaline; costal spine distinct, but very short.

Legs rather long; the spur of middle tibiae strong.

Chaetotaxy complete; ocellar bristles short, divergent or parallel; postvertical bristles weak, but the occipital row of bristles distinct and composed of very sparse rather long bristles; fronto-orbital bristles 2: 3; genal bristle 1, weak; propleural bristle wanting or very weak; dorso-central bristles before the middle of the postsutural area; mesopleural bristle 1 or 2; scutellar bristles 4; all the bristles black.

Genotype: *Trypeta dimidiata*, O. COSTA.

The genus is very nearly allied to *Ocnerioxa*<sup>(9)</sup> SPEISER, but it is at once distinguished by the bristly  $r_{4+5}$ , as well as by the short body.

#### Key to the Japanese species.

1. Small cross-vein (r-m) nearer to the tip of  $1M_2$ .
  2. Third antennal joint of male about  $1\frac{1}{2}$  times as long as wide, more or less pointed; arista distinctly pubescent ..... *praestans*, BEZZI
  22. Third antennal joint of male about twice as long as wide, distinctly rounded apically; arista bare ..... *formosana*, sp. nov.
11. Small cross-vein nearer to the middle of  $1M_2$ ; 3rd antennal joint of the both sexes about  $1\frac{1}{2}$ –2 times as long as wide.
  2. Pterostigma conspicuously shorter than the 2nd costal cell; 3rd antennal joint of male about  $1\frac{1}{2}$  times as long as wide, distinctly narrowed apically ..... *dimidiata*, O. COSTA.
  22. Pterostigma nearly as long as the 2nd costal cell; 3rd antennal joint of male about twice as long as wide, slightly narrowed apically ..... *longistigma*, sp. nov.

(9) BEZZI—Bull. Ent. Research, IX., p. 13 (1918).

63. *Hemilea praestans*, BEZZI.

Memoirs of the Indian Museum, III., no. 3, p. 141, pl. X, fig. 51 (*Ocneros*) (1913).

Not large in Formosan specimens; easily distinguished by two hyaline costal streaks which are usually connected with each other<sup>(10)</sup> as well as by the diagnose noted above.

Head pale yellow, face and cheeks white tomentose; frons sometimes darkened in the middle; lunula whitish tomentose, with narrow brownish upper margin; vibrissal edge furnished with rather strong black bristly hairs; all the bristles black, the ocellar bristles usually parallel and about as long as postvertical pair but finer, the genal bristle stronger than postvertical bristles. Antennae orange-yellow to brownish yellow; third joint broad, a little longer than two precedings together or about  $1\frac{1}{2}$  times as long as wide, narrowed apically and a little pointed upwards the rounded apex; median seta of the second joint long and black. Palpi pale yellow, furnished with a few black bristles; proboscis dark yellow.

Thorax shining, pale brownish yellow to dark reddish, clothed with a sparse black pubescence, the scutellum and posterior border of mesonotum being blackish dotted; humeri and notopleural streak yellowish white or pale yellow; pleurae light yellow to the pale reddish yellow. All the bristles black; mesopleural bristles usually one but rarely two, in the latter case the inferior one is about half as long as the superior one; propleural bristle very weak; apical scutellar bristles converging.

Abdomen shining, reddish yellow, blackish towards the anal apex, with black pubescence and bristles; ovipositor flattened, black, shorter than two preceding tergites together; male-genitalia yellow, the ventral plate conspicuously longer than the dorsal one and with two distinct apical hooks, the latter are strongly curved inwards and are provided with a short interior tooth.

Wings black, with the hind border hyaline from the base of alulae to IIM<sub>2</sub>, the limit being sharply defined and always hindwards the vein

(10) In BEZZI's description and figur these streaks are distinctly separated.

m; anal cell darkened; m-cu more or less margined with brown colour; after the stigma, along the costal margin, there are two hyaline very narrow streaks which are connected with each other. In Formosan species the black area is much broader than in the typical one and the limit is less sharply defined, as well as on m-cu darkened. Halteres dirty yellow, with the knob darkened.

Legs pale yellow, mainly black pubescent, the externo-inferior bristles of front femora being only 3 or 4.

Length Body 3.5-6 mm (♂ ♀); wings 4.5-7 mm (♂ ♀).

Hab. Formosa—Sokutsu (V); Shonoryo (V); Taichu (XII).

India—Kumaon (VI).

Type in the Indian Museum, Calcutta, British India. In Formosa the flies are often found on the flowers of *Tetrapanax papyrifera* KOCH.

#### 64. *Hemilea formosana*, sp. nov.

(Fig. 42; Pl. V, fig. 3)

Very distinguished species, with long third joint of antennae and with quite bare arista.

♂. Head reddish yellow; frons very faintly dusted with a whitish tomentum and covered with a sparse but rather long dark brown pubescence, the margins being more or less paler; lunula conspicuously white tomentose, with a rather conspicuous brown upper marginal band; vertex with a small black ocellar dot; vertical calli distinctly converging forwards; face conspicuously dusted with a whitish tomentum; cheeks less tomentose, with some short black bristles of the vibrissal edge. All the bristles black; genal bristle weak, but as long as the postvertical pair; ocellar bristles conspicuously longer than the upper superior fronto-orbital bristles, the latter being longer than the postvertical one; fronto-orbital bristles 2:3, strong, the intermediate inferior fronto-orbital pair being longest. Antennae dark yellow, with two basal joint paler; 3rd joint proportionally narrow and long, but not reaching to the upper mouth-edge, twice as long as wide, with the tip narrowly

rounded; arista blackish, quite bare; median seta of the second joint about as long as the joint. Palpi broad, dirty yellow, furnished with a very few black bristly hairs.

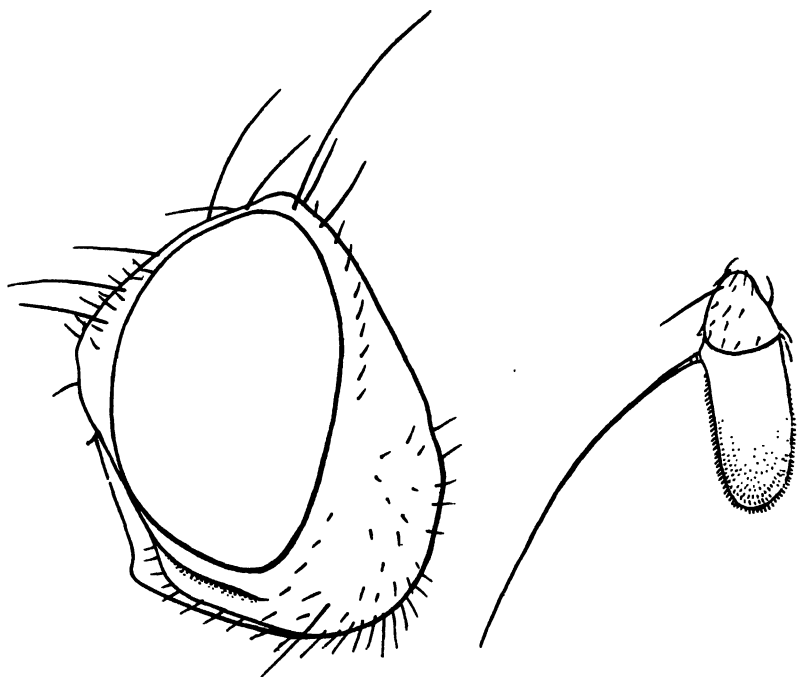


Fig. 42.

*Hemilea formosana*, sp. nov. ♂,  $\times$  ca 40. Right antenna,  $\times$  ca 60.

Mesonotum shining, reddish yellow, very rarely piceous in the median area, covered with a sparse black pubescence, with one pair of fine brown submedian stripes which are not reaching the hind margin and are distinctly interrupted at the suture; humeri and notopleural streak ash-coloured; pleurae and scutellum somewhat paler than the notum. All the bristles strong and black; propleural bristle distinct; mesopleural bristles usually two but rarely three, the upper one being longest; dorso-central bristles placed at just behind the line connected the anterior supra-alar bristles; apical scutellar bristles comparatively long, converging.

Abdomen shining, blackish brown, with the basal tergite yellow, black pubescent and bristled; genitalia yellow, the ventral plate very slender and more than twice as long as the dorsal one, with the apical spines being very small and black.

Wings as in the preceding species, but the black portion less extending posteriorly, especially so in IIM<sub>2</sub>; 2nd costal cell hyaline leaving the base, but in one specimen entirely black, in the latter case the costal hyaline white spot (which is usually only one and quadrate) is wanting; r<sub>4+5</sub> bristly nearly throughout the whole length. Halteres pale yellow, with the knob greyish.

Legs pale yellow, black and yellowish pubescent, the bristle-row of front femora composing of only three or four long black ones.

Length: Body 4.5-5 mm; wings 5.5-6 mm.

Hab. Formosa—Arisan (VI, X).

Type in the Entomological Museum of Government Research Institute, Taihoku, Formosa.

65. *Hemilea dimidiata*, O. COSTA.

Atti Accad. Sc. Napoli, IV., p. 12, pl. I, fig. 7 (*Trypeta*) (1837).

Easily recognized by the shorter black stigma and by the broader 3rd antennal joint, as well as by r-m which is placed on nearer to the middle of 1M<sub>2</sub>.

♂ ♀. Shining, reddish yellow to brownish yellow, with the abdomen blackish. Frons dull coloured, somewhat covered with a few whitish tomentum and with a very few brownish pubescence; lunula usually greyish tomentose, with an ill-defined brown upper marginal band; vibrissal edge furnished with a few short black bristly hairs; all the bristles black; the ocellar bristles usually short and parallel, being conspicuously shorter and finer than the postvertical pair; the genal bristle also distinctly shorter and finer than the latter. Antennae more or less brownish; 3rd joint about as long as two basal joints together or about 1½ times as long as wide, conspicuously narrowed apically but rounded; arista distinctly pubescent. Palpi somewhat dark coloured.

Thorax strongly shining, black pubescent; mesonotum with 5 fine blackish stripes, of which the middle one and lateral pair are very often obsolete, rarely all these wanting; from the humeral calli to the lower bases of wings there is a pale yellow longitudinal stripe, which is almost always very indistinct in paler specimens. All the bristles black; propleural bristle fine but distinct; mesopleural bristle almost always only one; apical scutellar pair rather parallel.

Abdomen shining, black, with the basal portion yellowish, black pubescent and bristled; 6th tergite of female about  $\frac{2}{3}$  as long as the preceding one; ovipositor shining, black or castaneous, its basal joint as long as the 5th tergite; genitalia of male with very long appendages, of which the ventral plate is nearly twice as long as the dorsal one and is furnished with two rather thick black apical hooks.

Wings very narrow and long, the blackish portion as in the preceding species, but the costal hyaline spot being very small and somewhat triangular; pterostigma conspicuously shorter than the 2nd costal cell; r-m nearer to the middle of 1M<sub>2</sub>.

Legs pale yellow, black and yellowish pubescent; front femora with a row of 4-6 long black bristles.

Length: Body 4-4.5 mm ( $\delta$   $\varphi$ ); wings 4.5-5 mm ( $\delta$   $\varphi$ ).

Hab. Japan—Toikanbetsu (VII), Sapporo (VI), Nagano (VII), Kyoto (VI), Uwajima (VI), Tsukumi (VI), Shitaura (VI).

South Europe.

#### 66. *Hemilea longistigma*, sp. nov.

(Fig. 43; Pl. V, fig. 4)

Very closely allied to *dimidiata*, but at once recognized by the long pterostigma and by the broad black submedian stripes of mesonotum.

$\delta$ . Shining, reddish yellow to reddish brown, with the abdomen somewhat darker. Frons yellowish brown, its sides being paler and dusted with a greyish tomentum; lunula whitish, rarely dark brown, its upper margin narrowly brown or blackish; vibrissal edge with rather strong black bristly hairs; all the bristles black, the ocellar and genal

bristles as in *dimidiata*. Antennae very broad, orange-yellow to reddish brown; 3rd joint a little shorter than twice the width and moderately narrowed apically; arista distinctly pubescent. Palpi small, pale yellow, with a few black bristly hairs.

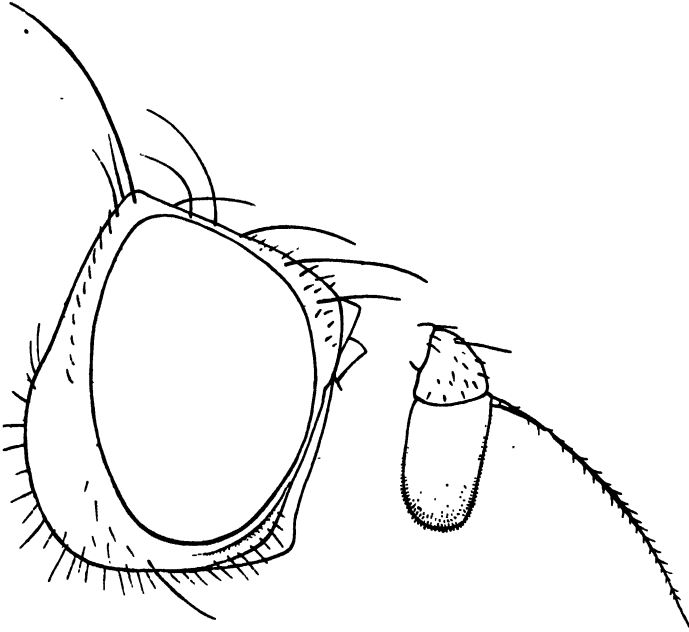


Fig. 43.

*Hemilea longistigma*, sp. nov. ♂,  $\times$  ca 32. Left antenna,  $\times$  ca 48.

Thorax reddish yellow to reddish brown, black pubescent; mesonotum with three black stripes, of which the median one is very fine and is almost always obsolete, the submedian pair is broad and conspicuous, extending nearly throughout the whole length; notopleural stripe distinct, from the humeral calli to the lower bases of wings, yellowish white; pleurae, mesophragma and scutellum a little paler than mesonotum. All the bristles black; dorso-central bristles distinctly behind the line connecting the anterior supra-alar bristles; mesopleural bristles 2, very strong; propleural bristle wanting, but there are a few very fine black bristly hairs; apical scutellar bristles rather parallel.

Abdomen reddish yellow to reddish brown, somewhat darker towards the apex, black pubescent and bristled; genitalia yellowish, the ventral plate about as long as the dorsal one and with two very minute blackish apical hooks; hypopygium shining, black.

Wings as in *dimidiata*, but the pterostigma a little shorter than the second costal cell, the black portion more extending behind in IIM<sub>2</sub>, and the hyaline costal spot much ill-defined.

Legs as in *dimidiata*.

Length: Body 5-5.5 mm; wings 5.5-6 mm.

Hab. Japan—Sapporo (4 ♂ ♂).

This may be a variety of *dimidiata*; type preserved in the Entomological Museum of Government Research Institute, Taihoku, Formosa.

## XXVIII. Genus **PARAHYPENIDIUM**, nov.

Very near to *Hypenidium* and *Hemilea*, LOEW, as well as to *Afrocneros*, BEZZI, but at once recognized from these genera by the conspicuously long stigma, and also easily distinguished from the former by the bristly r<sub>1+5</sub>, from the second by the long cheeks and from the latter by the well-pubescent arista.

Head distinctly narrower than thorax, when seen from front subquadrate and as high as wide; frons a little wider than the eye, nearly parallel-sided, distinctly longer than the face; face rather broad, in profile very slightly concave; antennal grooves very shallow, reaching to the mouth-edge; back of the head nearly flat on the upper half, but on the lower half strongly swollen; cheeks very large, conspicuously produced below, longer than  $\frac{2}{3}$  the height of the eye; genal groove very short, presented only on the front part; vibrissal edge without distinct bristles, obliquely straight; upper mouth-edge very indistinctly reflexed, when seen from front very broad and straight; epistoma very broad. Eyes rather small, oval, the posterior margin rather strongly convex, the upper angle very narrowly and lower angle very broadly rounded. Antennae inserted at just below the middle of eyes, very small, reaching to a little below the middle of the face; 3rd joint about



as long as the preceding two together or about twice as long as wide, distinctly rounded at the tip; arista rather long-pubescent but not plumose. Palpi narrow, very sparsely bristled; proboscis small.

Mesonotum longer than wide, distinctly broadened behind, slightly convex above, with black stripes; pleurae and scutellum without spot, the latter is rather broad subtriangular and is swollen above.

Abdomen shorter and not broader than thorax; 5th tergite of male large, about  $1\frac{1}{2}$  times as long as the 4th, furnished with some bristles on the posterior margin; hypopygium very small; genitalia with proportionally short appendages.

Wings narrow and long, about 3 times as long as wide, rather broadly rounded at the tip; stigma very long, broad, pointed apically, as long as the whole length of the costal cell;  $1M_2$  narrow and long, the upper and lower angles rectangular; anal cell drawn out into a short pointed lower angle, as long as the 2nd basal cell;  $r_{2+3}$  slightly curved forwards above  $r-m$ ;  $r_{4+5}$  distinctly curved hindwards at the base of  $r-m$ , conspicuously divergent with  $r_{2+3}$  apically, very sparsely bristled nearly throughout the whole length and also on the basal half of the under side;  $m$  nearly straight;  $r-m$  nearer to the posterior margin of  $1M_2$  than to the middle of the latter, perpendicular and very short;  $m-cu$  also perpendicular, but slightly convex outwards; anterior half of wings black, the rest hyaline.

Legs proportionally narrow and long; the spur of middle tibiae very long and strong.

Chaetotaxy complete: Ocellar bristles weak, but long, divergent; inner vertical bristles longer than the outer pair; postvertical bristles long; fronto-orbital bristles 2:3; occipital row composed of numerous long bristles; dorso-central bristles far behind the line connecting the anterior supra-alar bristles; mesopleural bristles two, its inferior one conspicuously shorter; propleural bristles distinct but very weak and short; scutellar bristles 4.

Genotype: *Hyphenidium polyfasciatum*, MIYAKE.

67. *Parahypenidium polyfasciata*, MIYAKE.

(Fig. 44)

Bull. Imp. Agric. Exp. St. Japan, II., no 2, p. 149, pl. X, p. 3 (*Hypenidium*) (1919).

The species has been replaced into the genus *Hemilea* by HENDEL (1927), as it has a long pointed posterior angle of anal cell of wings. It is, however, not a real *Hemilea*.

♂ ♀. Rather large species of ochraceous colored, with black bristles and very long wings. Head rather small; frons pale yellow, toward the middle more or less brownish, snow-white tomentose and

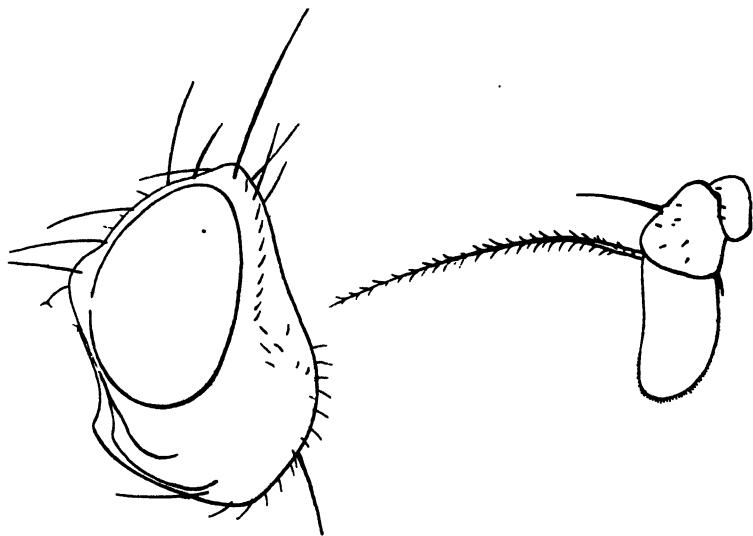


Fig. 44.

*Parahypenidium polyfasciata*, ♂, × ca 18. Right antenna, × ca 32.

very sparsely whitish pubescent; lunula very small, pale yellow; vertex with a very small black ocellar triangle; vertical calli not very long, pointed apically; face whitish, but the upper half almost always brown to blackish; cheeks whitish, without any spot, the vibrissal edge furnished with only one or two very short whitish bristly hairs; genal bristle rather strong; back of the head flat, but the lower half moderately swollen, more or less brownish pale yellow and whitish tomentose.

Antennae light orange-yellow to dark yellow, with two basal joints almost always whitish yellow; second joint nearly triangular, very sparsely and shortly bristled, with a long yellow to brown median seta; third joint shorter than twice the width, its upper margin very slightly concave and its under margin strongly convex, with the apex narrowly rounded. Palpi pale yellow to pale reddish yellow, moderately curved upwards, with the apex narrowly rounded, furnished with yellowish bristles. Proboscis pale yellow to pale reddish yellow.

Mesonotum yellow to ochraceous, white tomentose and black pubescent, with two pairs of blackish stripes of which the median pair is narrower and is extending from the anterior margin to the middle of postsutural disc, while the submedian pair is from just anterior inner corners of humeral calli to distinctly before the lateral bases of scutellum and is interrupted at the suture; pleurae pale yellow, distinctly white tomentose; mesophragma shining, dark castaneous, sometimes in the middle becoming paler; metapleural calli with a blackish spot; scutellum yellow to ochraceous, with an ill-defined very fine brown longitudinal median stripe which is not reaching the apex.

Abdomen rounded, ochraceous to brownish ochraceous, black pubescent and bristled; first tergite nearly entirely blackish; second tergite with a very ill-defined, interrupted in the middle, brown to blackish band; third to 5th (♂) or 6th (♀) with a broad black transverse band, leaving the hind margin, which is interrupted in the middle but in the female the band on each the 4th and 5th almost always not interrupted; ovipositor with the basal joint black, the remaining two joints testaceous; male genitalia brownish to blackish, with the appendages yellowish to brownish.

Wings blackish, with the posterior half hyaline, that limiting line being irregular, at the outer side of tip of the stigma and rarely on just above the base of r-m with a small yellowish hyaline spot, in paler specimens on the apex of  $R_1$  and throughout  $R_4$  there is a longitudinal hyaline but ill-defined streak and also the 2nd costal cell more or less hyaline.

Legs pale yellowish white, pale pubescent and bristled.

Length: Body 6.5–7.5 mm; wings 7–10.5 mm.

Hab: Japan—Kiso-Fukushima (VII), Daisen (VII), Sapporo (VI).

Type is not found in MIYAKE's collection; male type in the Entomological Museum of Government Research Institute, Taihoku, Formosa.

## XXIX. Genus *POECILOTHEA*, HENDEL.

Wien. Ent. Zeit., XXXIII., p. 83 (1914); Ann. Mus. Nat. Hung. XIII., p. 442 (1915).

Genotype—*Poecilotheca angustifrons*, HENDEL.

Head as wide as long, or wider than high; frons very narrow, parallel-sided, about  $\frac{1}{2}$  as wide as head, distinctly convex when seen from side; lunula small but rather broad; vertex indistinctly carinate, with rather broad but short vertical calli; face narrow and long, slightly broadened beneath, flattened and straight, with distinctly reflexed upper mouth-edge, the antennal grooves moderate and hardly reaching the mouth-edge, the eye-margins very narrow; back of the head flattened, but very slightly swollen beneath; cheeks linear, moderately swollen behind, with the fine genal groove; bristles of vibrissal edge distinct but very short. Eyes large, about twice as long as wide, the posterior and anterior margins evenly convex, the latter being less than the former, the upper and lower angles rounded. Antennae inserted in the middle of eyes, rather broad and shorter than face; 3rd joint about twice as long as long as wide, the upper and lower margins nearly parallel, with the broad rounded tip; arista very short and sparsely pubescent; median seta of 2nd joint distinct but shorter than the width of the joint. Palpi linear and short, slightly bristled.

Mesonotum longer than wide, a little broadened in the middle, convex above; scutellum rather long, subtriangular, strongly swollen above.

Abdomen distinctly shorter than thorax, but broader than the latter; 5th tergite of male a little shorter than the preceding two together, furnished with a few long bristles on the posterior margin; basal joint of ovipositor flattened, as long as wide.

Wings moderate in size, without marginal spine; stigma rather

large, pointed, nearly as long as the second costal cell; anal cell drawn out into a short pointed lower angle, a little shorter than the 2nd basal cell; auxiliary vein not reaching the wing-margin;  $r_{2+3}$  and  $r_{4+5}$  nearly straight, the latter being distinctly and thickly bristled throughout the whole length, but not bristly on the under side;  $1M_2$  strongly curved at the apical portion;  $r-m$  in the middle of  $1M_2$ , perpendicular, but slightly curved inwards;  $m-cu$  perpendicular and straight, but the lower angle of  $1M_2$  more or less pointed.

Legs rather strong; middle femora with two rows of very short but very strong bristles on the under side of apical two-thirds; tibiae with only one spur; hind femora with only one row of rather long and very strong bristles on the under side of the apical half.

Chaetotaxy complete; ocellar bristles very weak, divergent; fronto-orbital bristles 2:2; postvertical bristles very weak; vertical bristles nearly the same in length; genal bristle very weak; occipital row composed of numerous comparatively long bristles; praesutural bristles 2; dorso-central bristles very near to the praescutellar pair; mesopleural bristle one; scutellar bristles 4.

Only one species known to me.

68. *Poecilothea angustifrons*, HENDEL.

Ann. Mus. Nat. Hung. XIII., p. 443, Pl. IX, fig. 12 (1915).

♀.♀. Pale reddish yellow species of small-sized. Frons orange-yellow, with a very inconspicuous lustre, furnished with very numerous fine brown hairs; lunula brownish; vertex with a rather large black ocellar triangle, and with a very fine transverse carina behind the ocellar triangle; face somewhat brownish, especially at just above the upper mouth-edge; cheeks pale yellow, with the bristle-like hairs dark brown; back of the head pale reddish yellow, the lower half being pale yellow. Antennae pale brownish yellow. Palpi and proboscis yellowish brown, black bristly.

Thorax strongly shining, pale reddish yellow, yellowish pubescent, with two pairs of black spots of which the outer one is placed on just

behind the bases of wings and the other one on the mesophragma; pleurae slightly paler than dorsum.

Abdomen darker than mesonotum, covered with numerous black pubescence and furnished with a few black bristles; basal joint of ovipositor shining black; male-genitalia yellowish, with long slender ventral plate which is furnished with two long conspicuously curved apical spines.

Wings hyaline; stigma pale yellow, with a blackish brown apical spot;  $R_1$  and  $R_2$  nearly entirely pale yellow, forming a broad costal band; three apical radiated bands blackish brown, two apical ones of which are nearly parallel but the second one distinctly narrower than the apical short band, while the third is very short, placed on m-cu and conspicuously isolate.

Legs pale reddish yellow, mostly black pubescent, and black bristled.

Length: Body 4.5-5.5 mm; wings 5-6 mm.

Hab. Formosa—Hozan (V); Toyenmongai.

Types in the National Museum of Hungary, Budapest.

### XXX. Genus **STAURELLA**, BEZZI.

Memoir of Ind. Mus. III., p. 121 (1913).

Genotype: *Musca crux*, FABRICIUS.

Head about as wide as thorax or broader than high; frons parallel-sided, about as wide as the eye; vertex more or less carinate; face moderately concave, with rather shallow antennal grooves, distinctly broadened beneath; back of the head slightly convex, but the upper part more or less concave; cheeks rather linear. Eyes large and rounded. Antennae inserted in the middle of eyes, reaching (or not) to the upper mouth-edge; 3rd joint about 3 times the length of the 2nd or as long as wide, rounded at the tip; arista shortly but densely plumose. Palpi rather narrow, distinctly curved upwards, bristly.

Mesonotum elongate, longer than  $1\frac{1}{2}$  times the width, broadest after the middle, moderately convex above; scutellum triangular, flattened above.

Abdomen narrow and long; 5th tergite of male conspicuously longer than the preceding one, bristly at the posterior margin; hypopygium small and spherical; genitalia strongly developed, prominent, with a long pendulous middle organ and very long ventral appendage; basal joint of ovipositor flat, very narrow, not bristly at the tip, as long as the last 3 tergites together.

Wings rather narrow; stigma long, but shorter than the second costal cell, distinctly pointed;  $1M_2$  distinctly shorter than  $R_5$ , gradually broadened towards the apex, with the lower angle almost always not pointed; anal cell a little shorter than or as long as  $M_1$ , drawn out into a short pointed lower angle; almost all the veins straight;  $r_{4+5}$  very sparsely bristled or nearly naked on the upper side, the under side being almost always bare;  $r-m$  about in the middle of  $1M_2$ .

Legs moderate in length; middle tibiae with a single apical spur; hind tibiae with a distinct row of rather long bristles.

Chaetotaxy complete but praesutural and ocellar bristles wanting, the latter being sometimes present but very indistinct; fronto-orbital bristles 1:2 or 1:3; postvertical bristles and bristles of occipital row weak; dorso-central bristles nearer to the bases of scutellum than to the suture; mesopleural bristles 1 or 2; scutellar bristles 4.

Only one species from Japan.

69. *Staurella oshimensis*, sp. nov.

(Fig. 45; Pl. V, fig. 5)

A narrow elongated, medium-sized, yellowish species; at once distinguished from all the species, known from India, by the wing-pattern and by the coloration of body.

♂. Head orange-yellow; frons somewhat brownish at the middle; vertex with a very small blackish ocellar triangle; vertical calli short and broad, strongly shining, pale yellowish; face shining, pale yellowish, with the very narrow eye-margins orange-yellow; cheeks orange-yellow, furnished with a few very sparse dark brown bristly hairs; back of the head pale orange-yellow, with a V-shaped black band on the upper half,

covered with a very few fine brownish hairs on the lower half. Antennae, palpi and proboscis dark orange-yellow. Bristles black; ocellar bristles wanting; fronto-orbital bristles 1:3, the superior one strongest but not longer than the upper inferior one; postvertical bristles very

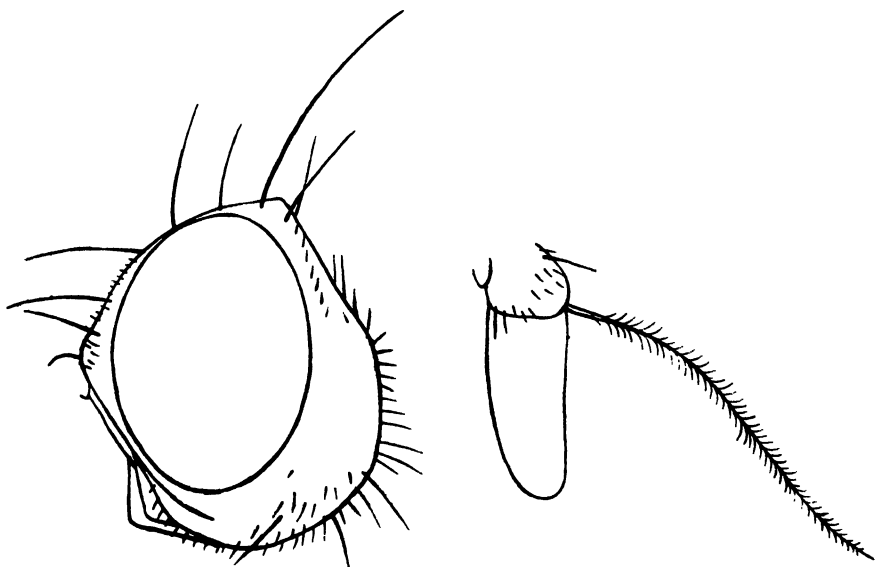


Fig. 45.

*Staurella oshimensis*, sp. nov. ♂,  $\times$  ca 23. Left antenna,  $\times$  ca 40.

short, parallel; vertical bristles very long, the outer pair being shorter than the inner pair; genal bristle very weak.

Mesonotum greyish yellow, covered with a numerous yellowish pubescence, with two broad blackish longitudinal streaks, which are interrupted at the suture; pleurae paler than dorsum, with an ill-defined small blackish spot above the bases of front coxae; mesophragma black; mesopleural bristle only one.

Abdomen about as long as the head and thorax united, orange-yellow, black pubescent and bristled, with a very broad blackish lateral streak throughout the whole length; hypopygium strongly shining black; genitalia yellowish brown and rather small, the median organ being somewhat whitish and distinctly shorter than the yellow ventral appen-



dage, the latter is slightly reddish coloured and furnished with two very minute black apical teeth.

Wings moderate in length, without costal bristle, hyaline; stigma black, very slightly shorter than the second costal cell; apical band not separated but with a very long hyaline anterior cross band and a very short posterior marginal spot, the median band straight from the tip of stigma to the middle of the mouth of Cu, and the basal one from the base of stigma to the tip of anal cell narrow and ill-defined.

Legs long and slender, yellow, black pubescent.

Length: Body 8.5 mm; wings 8 mm.

Hab. Japan—Izu-Oshima (VIII).

Only one male (type) preserved in the Entomological Museum of Government Research Institute, Taihoku, Formosa.

### XXXI. Genus **SPILOCOSMIA**, BEZZI.

Philippine Journ. Science, VIII., no. 4, Sec. D., p. 327 (1913)

Genotype—*Spilocosmia bakeri*, BEZZI.

#### Subgenus **PROSPILOCOSMIA** nov.

Distinguished by two costal spines of wings and distinct ocellar bristles, as well as by the spine-like apical process of 3rd antennal joint.

Head about as wide as the thorax, or broader than high; frons broader than the eye, distinctly narrowed posteriorly, flat, when seen from side straight; lunula distinctly concave; vertex carinate, with very long vertical calli, which are extending to the middle of frons; face distinctly broader than long, with shallow and broad antennal grooves which are hardly reaching the mouth-edge, when seen from side distinctly concave; back of the head rather strongly swollen, but the upper half slightly concave; cheeks moderately produced below the eyes, behind the cheeks there are numerous rather long bristles; bristles of the vibrissal edge very strong and rather numerous. Eyes oval, the posterior margin being slightly rounded and the upper angle distinctly narrower

than the lower one. Antenna inserted about in the middle of eyes; 3rd joint not reaching to the upper mouth-edge, its upper end pointed and with a distinct spine-like process; arista rather sparsely plumose. Palpi long, straight but at the base it is of course curved, rounded at the tip, distinctly bristled. Palpi very large.

Mesonotum longer than wide, very slightly broadened in the middle; scutellum moderate in size, subtriangular, more or less flattened above.

Abdomen narrow and long, nearly as long as thorax, rather flattened, strongly bristled at the tip; 5th tergite of male a little shorter than two precedings together; 6th of female about  $\frac{2}{3}$  as long as the 5th; ovipositor very long, strongly depressed, its basal joint being as long as the four preceding tergites together, about as long as  $1\frac{1}{2}$  times the width; hypopygium small, more or less rounded; genitalia rather small, with very broad and short appendages.

Wings broad, with two costal spines, one of which is very strong; stigma rather long about  $\frac{2}{3}$  as long as the second costal cell, pointed anal cell a little longer than second basal cell; drawn out into a long pointed lower angle;  $r_{2+3}$  nearly straight;  $r_{4+5}$  distinctly but broadly waved, bristly on the upper side nearly throughout the whole length but very sparsely, on the under side with a few bristles at the base; m distinctly waved on the 2nd section, but on the 3rd and also apical sections nearly straight, very slightly divergent with  $r_{4+5}$ ; r-m at just after the middle of  $1M_2$ , slightly curved inwards; m-cu very slightly S-like waved, nearly perpendicular.

Legs strong; middle tibiae with two apical spurs; hind tibiae with a row of bristles on the outer margin.

Chaetotaxy complete; ocellar bristles weak or strong; fronto-orbital 2: 2 or 3, the lower pair of superior ones being very strong; inner vertical very strong; postvertical moderate in length; bristles of the occipital row proportionally long but rather sparse; genal bristle strong; propleural bristles very weak; dorso-central bristles nearer to the suture than to the base of scutellum; mesopleural two; scutellar 4; pteropleural 1, very strong.

Only one species found in Formosa.

70. *Prospilocosmia punctata*, sp. nov.

(Fig. 46; Pl. V, fig. 6)

Very near to *Spilocosmia bakeri* BEZZI from Philippines, but differs from it in the distinct ocellar bristles, in the 4 black dots along the fore-margin of thorax, and in the two conspicuous costal bristles of wings, as well as in a very short spine-like apical process of antennae.

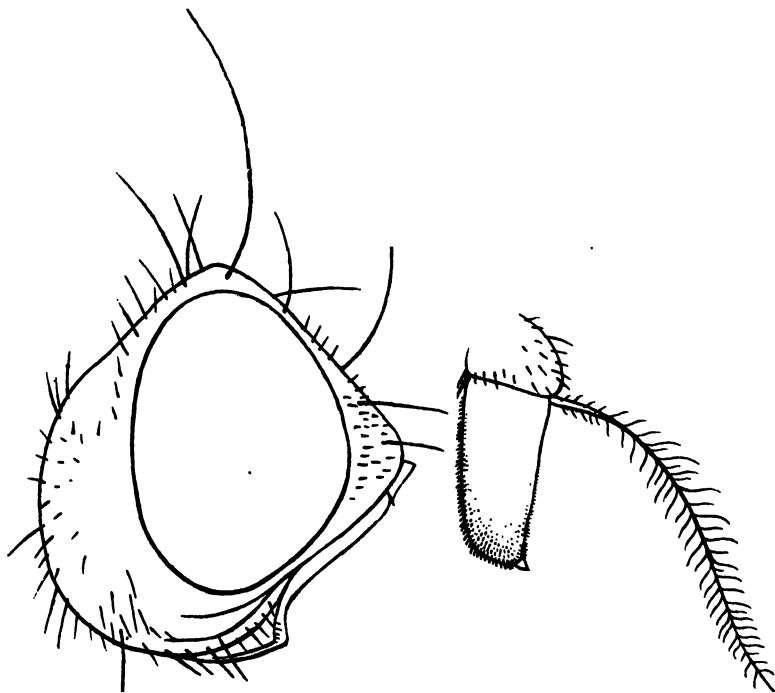


Fig. 46.

*Prospilocosmia punctata*, sp. nov. ♀, × ca 32. Left antenna, × ca 40.

♂ ♀. Yellow species of medium-sized, with one yellowish and 3 brownish bands on the wings. Head pale yellow; frons furnished with a very fine sparse brown pubescence, brownish or reddish orange-yellow in the middle above the antennae; lunula conspicuously hollowed, with a narrow brown margin; vertex with a very small black ocellar dot; face with some metallic lustre, with a round black spot in the middle

just above the upper mouth-edge; back of the head pale yellow, somewhat whitish tomentose in the lower half. Antennae orange-yellow; 3rd joint a little longer than twice the basal width, its upper margin in the female straight and in the male slightly convex, with a short and rather broad apical spine; 2nd joint furnished with numerous black bristly hairs, with the rather short black median seta; first joint very short, somewhat whitish, its apical margin with a row of very fine brown bristly hairs; arista blackish, with the base yellowish, black plumose. Palpi yellow, more or less orange-coloured or darkened toward the tip, reaching the upper mouth-edge, black bristly. Proboscis yellow to brownish yellow. Bristles black; fronto-orbital 2:2, the lower superior one longest and the lower inferior one shortest; inner vertical pair very long and strong, but the outer pair rather weak and about half as long as the inner one; postvertical rather long, the inner pair being about as long as the outer vertical one and parallel; ocellar strong, about as long as the upper superior fronto-orbital one; genal bristles 2, one being weak.

Mesonotum shining, yellow to pale brownish yellow, with 10 black dots, which are follows: One on either the humeral and notopleural calli; 1 on the inner end of the suture, 1 at the base of inner supra-alar bristle (the largest of all), and 1 at just behind the lateral scapular bristles (the smallest and longitudinal). Pleurae somewhat paler than the notum; scutellum with a large round black spot at the apex. All the bristles black and long.

Abdomen ochre-yellow, with a narrow black lateral marginal streak except for the basal tergite, less shining than thorax, black pubescent and bristled; 6th tergite of the female with a round black spot at the lateral margin, instead of the lateral streak; basal joint of ovipositor strongly shining, pale reddish yellow, with the posterior margin black, the remaining joints being yellowish and the second one with a pair of ill-defined blackish latero-basal spots; hypopygium black, genitalia yellowish. Ventre yellow, with a lateral marginal black line from second to fifth sternites, the line often being very faint.

Wings comparatively broad, especially in the male, with yellow

veins; stigma yellow, from it arises an ill-defined yellowish band obliquely over the basal cross vein to the anal cell. Three parallel yellowish brown to dark brown bands narrow and entire; the apical band at the apex of wing, extending from below the end of  $r_{2+3}$  to above the end of cu, being broader than others and interrupted in  $R_5$  by an oblique hyaline streak which ends at the apex of m; the subapical band more or less curved, from a little before the tip of  $r_{2+3}$  to near the middle of the mouth of Cu, over m-cu, becoming slightly broadened posteriorly, and rarely hardly interrupted in  $R_5$ ; the median band straight, from the middle of  $R_1$  to just before the end of the anal vein, passing over r-m. Halteres pale yellow, with the knob slightly darkened.

Legs yellow, black pubescent and bristled.

Length: Body 5.5–7 mm; wings 5.5–6.5 mm.

Hab. Formosa—Musha (V, VI); Arisan (X); Rikiriki (III); Taito (II, III); Urai (VII).

Types in the Entomological Museum of Government Research Institute, Taihoku, Formosa.

#### 71. *Prospilocosmia punctata kotoshoensis*, nov.

One pair from Kotosho (IV) slightly differs from the typical form as in follows: Black spots on mesonotum 12, one being at the base of dorso-central bristle and the three spots on the submedian line connected by a narrow stripe; the apical band of wings shorter and not interrupted, the subapical band at the anterior third very narrowed in the female, or obsolete in the male.

### XXXII. Genus **ACIDIA**, ROBINEAU-DESBOIDY.

Essai sur les Myodaires, p. 720 (1830).

*Epidesmia*, RONDANI, Prodr. I., p. 112 (1856).

*Priomimera*, RONDANI, Prodr. IV., p. 10 (1861).

*Acydia*, RONDANI, (p. p.), Prodr. VII., p. 177 (1871).

*Pseudacidia*, subg. nov.

Genotype—*Acidia cognata*, WIEDEMANN.

Head rather rounded, broader than high, or narrower than the thorax; frons as wide as or broader than the eye, parallel-sided; lunula

small; vertex not carinate, with the rather narrow vertical calli which are about  $\frac{1}{3}$  as long as the frons; face rather long, moderately broadened beneath, with the broad antennal grooves, in profile nearly straight; back of the head strongly produced behind; cheeks about  $\frac{1}{6}$ – $\frac{1}{4}$  as high as the eye, with the very shallow and narrow genal groove; vibrissal edge bristly. Eyes rather oblong, very slightly narrowed beneath but the lower angle usually broader than the upper one, the posterior margin very slightly curved. Antennae inserted at just below the middle of eyes, a little longer than a half the face; 3rd joint about twice or  $1\frac{1}{2}$  times as long as wide, obtusely rounded at the tip; arista distinctly pubescent. Palpi moderate in size, bristly, rounded at the tip; proboscis not very large.

Mesonotum distinctly longer than wide, broadest after the middle, convex above; scutellum moderate in size, subtriangular, strongly convex above.

Abdomen oblong, about as long as the thorax, bristly at the lateral tips; 5th tergite of male a little shorter than two precedings together; 6th tergite of female about  $\frac{2}{3}$  as long as the 5th; ovipositor short, the basal joint being depressed and nearly as long as the 5th tergite; hypopygium small, but the genitalia comparatively large.

Wings rather narrow, with two<sup>(11)</sup> very short costal spines; stigma small, pointed, about a half as long as the second costal cell; anal cell a little shorter than or as long as the 2nd basal cell, drawn out into a short pointed lower angle;  $r_{2+3}$  nearly straight or very slightly waved;  $r_{4+5}$  very slightly waved or straight, distinctly but very sparsely bristled till r-m, often also on the underside distinctly bristled; r-m at or after the middle of  $1M_2$ , perpendicular; m-cu perpendicular or slightly oblique, almost always straight; m nearly straight.

Legs moderate in length; middle tibiae with a single spur; hind tibiae with a row of short bristles on the outer margin.

Chaetotaxy complete; ocellar bristles not strong; fronto-orbital bristles 1-2:3-6; vertical 2, the inner pair being stronger; postvertical

(11) *Acidia cognata* has always two very short costal spines of wings, never only one.

moderate in length; genal rather strong; propleural bristles distinct; mesopleural 2 or rarely 3; sterno-pleural wanting or presenting; dorso-central usually nearer to the praescutellar bristles than to the suture; scutellar 4.

#### Key to the Japanese species.

1. Sternopleural bristle present and strong; dorso-central bristles at just after the line connecting the anterior supra-alar bristles.....Subgen. *Pseudacidia*<sup>(12)</sup>, nov.
  2. Inferior fronto-orbital bristles 3.
    3. Dorso-central bristles on the line connecting the anterior supra-alar bristles; wings with 4 isolated yellowish bands.....*minowai*, sp. nov.
    33. Dorso-central bristles behind the line connecting the anterior supra-alar bristles.
      4. Wings mainly hyaline, with blackish or yellowish bands.
        5. Wings with very broad black apical band.
          6. Apical band more or less rounded and isolated .....*ambigua*, sp. nov.
          66. Apical band not rounded nor isolated.
            7. Wings yellowish hyaline, the bands being partly brownish; abdomen entirely orange-yellow excepting of ovipositor.....*issikii*, sp. nov.
            77. Wings clearly hyaline, the bands being blackish; abdomen with broad black lateral streaks.....*lineata*, sp. nov.
          55. Wings with narrow yellowish apical band .....*kuwayamai*, sp. nov.
        44. Wings blackish brown, with many hyaline spots.....*maculata*, sp. nov.
    22. Inferior fronto-orbital bristles more than 4.
      3. Pleurae at just behind the wing-bases with a small triangular black spot. ....*takeuchii*, sp. nov.
    33. Wing-bases without black spot.
      4. r-m after the middle of 1M<sub>2</sub>; V-shaped sepia median band of wings entire .....*yoshinoi*, sp. nov.
      44. r-m at the middle of 1M<sub>2</sub>; V-shaped median band interrupted at its lower corner .....*sonani*, sp. nov.
11. Sternopleural bristle wanting.....Subgen. *ACIDIA*, R.-D. Inferior fronto-orbital bristles variable in number 3-4; wings with 3 blackish divergent apical bands; wing-bases with a small black spot; r-m in the middle of 1M<sub>2</sub>.....*japonica*, sp. nov.

(12) Very near to *Acidiella* HENDEL, but distinguished by distinct propleural bristles.

72. *Pseudacidia issikii*, sp. nov.

(Fig 47; Pl. VI, fig. 1)

♀. Yellow species of medium-sized. Frons orange-yellow, distinctly broader than the eye, covered with rather numerous blackish fine hairs; lunula distinctly whitish tomentose, with the posterior margin brown; vertex with a small black ocellar dot; vertical calli inwardly curved, nearly same in width throughout and strongly shining; face whitish tomentose, with moderately broad eye-margins; back of the head and cheeks orange-yellow, on the lateral swellings with sparse but rather long black bristly hairs; bristles of vibrissal edge black and conspicuous.

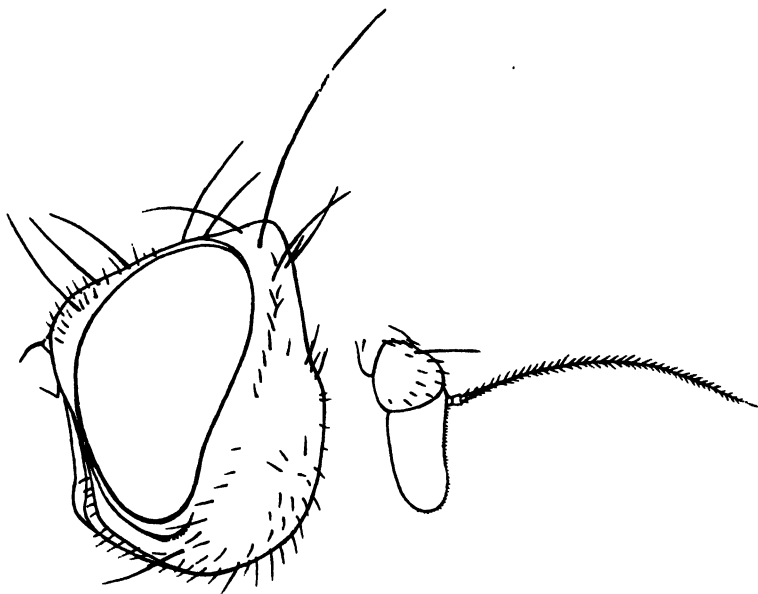


Fig. 47.

*Pseudacidia issikii*, sp. nov. ♀,  $\times$  ca 32. Left antenna,  $\times$  ca 40.

Antennae yellow; 3rd joint slightly shorter than two preceding joints together, or about as long as  $1\frac{1}{2}$  the width; arista longer than the antenna, black, with the base pale yellow, black pubescent. Palpi pale yellowish, narrow, not reaching towards the upper mouth-edge, furnished with a few long black bristles; proboscis somewhat darkened. All the



bristles black; fronto-orbital 2:3, the upper superior one being shortest; ocellar bristles rather long, about as long as the upper superior fronto-orbital one; inner vertical bristles very strong and longest in all the bristles; postvertical bristles rather short; genal bristle very weak.

Thorax shining yellow, black pubescent and bristled; bristle-row of prothorax conspicuous; mesophragma shining blackish.

Abdomen shining, reddish yellow, black pubescent and bristled; basal joint of ovipositor strongly shining brownish black and conspicuously broader than long; two apical joints of ovipositor very narrow and small, pale reddish yellow.

Wings blackish brown, the basal half being yellowish, with yellowish veins and hyaline indentations; two costal indentations triangular, the first one at just after the stigma extending to the base of r-m, the second one placed at the middle of the mouth of  $R_1$  very near to the former and reaching into  $R_3$ ; one very large posterior indentation irregular in shape, placed after m-cu and extending to the middle of  $R_3$ ; one rather large transverse hyaline spot at the apex of  $1M_2$  extending to the tip of Cu; other small hyaline spot on the apical part of R never extending to the adjacent cells; stigma blackish, very little longer than a half the second costal cell, the latter yellowish hyaline;  $r_{4+5}$  very slightly curved, not bristly on the under side; r-m rather near to m-cu which is not oblique. Halteres pale yellowish.

Legs pale yellow, black pubescent and bristled; spur of middle tibiae very long, about half as long as the metatarsus.

Length: Body 5.5–6.5 mm; wings 6–7 mm.

Hab. Corea Koryo (VII), collected by Prof. S. ISSIKI.

Type in the Entomological Museum of Government Research Institute, Taihoku, Formosa.

### 73. *Pseudacidia kuwayamai*, sp. nov.

(Fig. 48; Pl. VI, fig. 2)

Pale yellowish species of small-sized, distinguished from all the *Pseudacidia*-species by yellowish white bristles of prothorax and by very

narrow bands of wings, as well as by a single superior fronto-orbital bristle.

♂. Head whitish tomentose; frons distinctly broader than eye, yellowish, very sparsely white pubescent; lunula very narrow, with a fine brown marginal band; vertex with a very minute black ocellar dot; face with very narrow eye-margins which are conspicuously broadened beneath; back of the head with paler lateral swellings, at where there are some rather long brown hairs; bristles of vibrissal edge distinct and blackish. Antennae pale yellow; 3rd joint as long as two precedings together, or about as long as  $1\frac{1}{2}$  times the width, suddenly narrowed toward the rounded tip; arista blackish, with the basal portion pale yellow, black pubescent. Palpi yellowish, reaching the upper mouth-edge, narrow but slightly dilated toward the narrowly rounded tip, black bristly. Proboscis rather large, somewhat brownish. All the bristles brown; fronto-orbital bristles 2: 3, the upper inferior one being longest; ocellar bristles rather short and fine, but longer than postvertical pair which is yellowish brown; genal bristle fine.

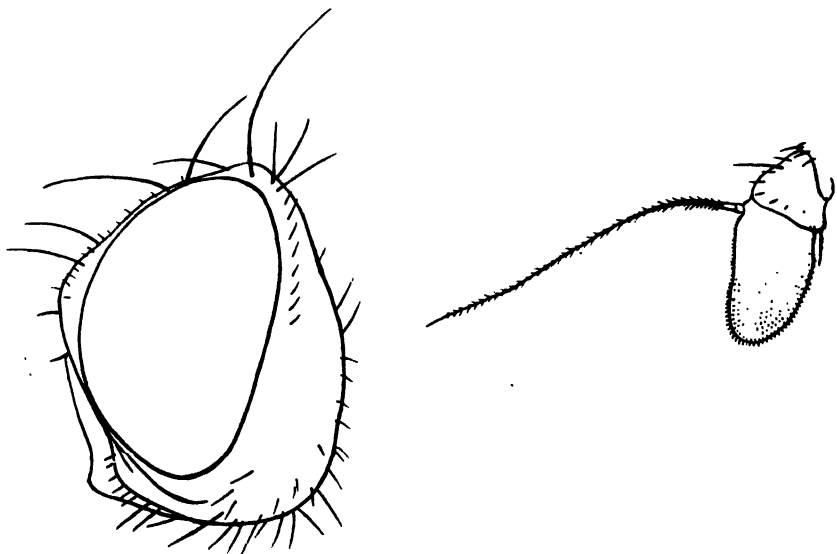


Fig. 48.

Mesonotum strongly shining, yellow, very faintly brownish, yellow pubescent; scutellum pale yellowish; pleurae paler than the notum; mesophragma much strongly shining, brownish yellow. All the bristles black, excepting of bristles of prothorax.

Abdomen yellow, black pubescent and bristled; hypopygium very small, shining blackish brown.

Wings pale yellowish but blackish toward the tip, with the stigma blackish, which is about  $\frac{2}{3}$  as long as the second costal cell, and with three hyaline indentations; first indentation at just after the stigma, smallest and triangular, reaching the  $r_{4+5}$  at a little far before the base of r-m; second one very near to the first one, forming a submedian cross band and extending to Cu, passing between r-m and m-cu; 3rd indentation very large, triangular, left narrow blackish apico-costal and subapical cross bands; costal cell and nearly entire of cubital cell hyaline, in the middle of R there is a longitudinal hyaline spot;  $r_{4+5}$  very slightly curved and nearly parallel with m, in the basal half very sparsely bristled on the upper side, but on the under side there is only one somewhat strong bristle at the base of r-m.

Legs pale yellow, black and pale yellow pubescent; spur of middle tibiae very long, about half as long as the metatarsus.

Length: Body 5 mm; wings 5 mm.

Hab. Japan—Hokkaido (Sapposo VII, Onomura VIII).

Type, collected by Dr. S. KUWAYAMA, in the Entomological Museum of Government Research Institute, Taihoku, Formosa.

#### 74. *Pseudacidia takeuchii*, sp. nov.

(Fig. 49; Pl. VI, fig. 3)

Reddish yellow, very striking species with S-like black apical band of wing and with long yellowish stigma.

♂ ♀. Head yellowish, narrower than the thorax, rather globular; frons very slightly broader than the eye, slightly broadened forwards, pale yellow to reddish yellow, furnished with many black pubescence, on just above the lunula there is a few pale yellow pubescence; lunula

very small, whitish yellow, with the upper margin almost always brownish, but in the female often not; vertex with a proportionally large black ocellar dot; vertical calli narrow and straight; face shorter

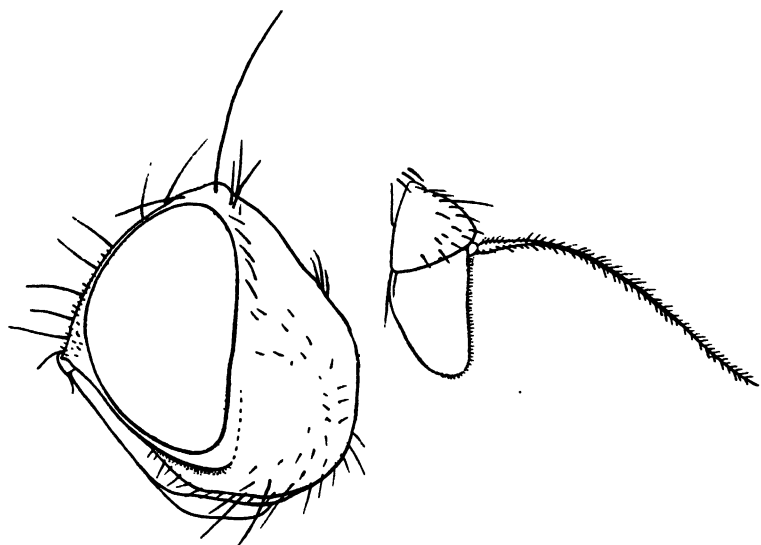


Fig. 49.

*Pseudacidia takeuchii*, sp. nov. ♀, × ca 25. Left antenna ×, ca 44.

than the frons, with very broad antennal grooves and narrow eye-margins, in profile straight, the upper mouth-edge being never reflexed; back of the head strongly convex on the lower half and produced obliquely below, with the lateral swellings black pubescent; cheeks rather large; vibrissal edge furnished with numerous black bristly hairs. Antennae reddish yellow, with two basal joints yellow; 3rd joint a little longer than two precedings together, or about as long as  $1\frac{1}{2}$  times the width, gradually narrowed toward the very narrowly rounded tip, at where it is nearly pointed in the male; arista black, with yellowish base, black pubescent; median seta of the second joint black, very long, distinctly longer than the joint. Palpi broad, pale yellowish, very sparsely black bristled; proboscis brownish. All the bristles black; fronto-orbital bristles 2: 4 or more, the inferior pair being very variable in number and often asymmetrical; ocellar bristles comparatively weak, as long as

the vertical pair; bristles of occipital row rather strong; genal bristle conspicuous.

Mesonotum usually reddish yellow, moderately shining, black pubescent, conspicuously broadened behind, with two blackish brown spots in the middle of the front margin, which are very conspicuous in the male; pleurae and scutellum distinctly paler than notum, from the humeral callus to the anterior base of wing along the upper margin of mesopleuron there is a yellowish white streak which is often indistinct in dried specimens; mesophragma strongly shining, with two very broad black streaks; at just behind the wing-bases and at just front the bases of halteres there is a distinct round black dot. All the bristles long and black; mesopleural bristles usually two, but rarely three; sternopleural bristle very strong; bristles of prothorax black, conspicuous.

Abdomen somewhat brownish, covered with numerous rather long black hairs, and furnished with black bristly hairs on the margin of each tergite; 6th tergite of female a little shorter than the 5th; basal joint of ovipositor reddish yellow, shorter than broad or a little longer than the 5th tergite; hypopygium small, yellowish; genitalia pale yellowish, with long broad appendages, of which the ventral one is black tipped.

Wings proportionally large and long; the basal half yellowish, with the cubital cell, a longitudinal oblong spot in R, and a triangular small spot at just behind the second costal cell, hyaline; the apical half hyaline, with a conspicuous black S-like band as figured in the plate VI, and also with a narrow and very short yellowish band in the middle of costal indentation extending to  $r_{4+5}$ ; stigma little longer than  $\frac{2}{3}$  the second costal cell, orange-yellow;  $r_{4+5}$  slightly curved and parallel with m, sparsely bristled on the basal half of the upper side, on the under side with a very few bristles; r-m just after the middle of  $1M_2$ . Halteres pale yellow, with the knob brownish.

Legs pale yellow, mainly black pubescent and bristled.

Length: Body 7-9 mm; wings 8-10 mm.

Hab. Japan—Sapporo (VIII); Fuji (VIII); Aomori (VI); Daisen (VII); Odaigahara (VII).

## Saghalien—Kaibato (VII).

The Types, collected by Mr. K. TAKEUCHI, are preserved in the Entomological Museum of Government Research Institute, Taihoku, Formosa.

75. *Pseudacidia yoshinoi*, sp. nov.

(Fig. 50; Pl. VI, fig. 4)

Closely allied to the preceding species, but at once distinguished by no front marginal black spots of mesonotum, and by the shorter stigma, as well as by the peculiar shaped 3rd joint of antennae.

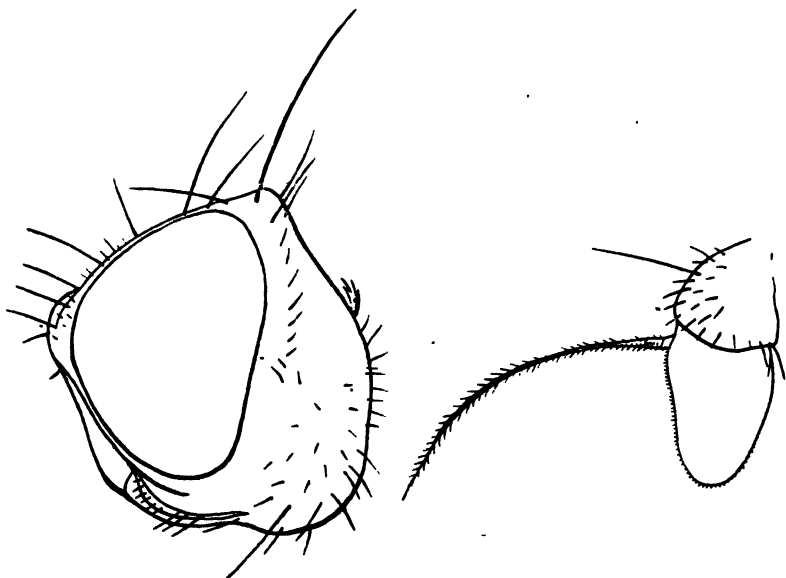


Fig. 50.

*Pseudacidia yoshinoi*, sp. nov. ♂,  $\times$  ca 32. Right antenna,  $\times$  ca 57.

Head reddish yellow, with the face, the cheeks and the lateral swellings whitish yellow; frons covered with a few blackish brown pubescence and without yellowish one. Third joint of antennae longer than the two preceding joints together, distinctly narrowed toward the very narrowly rounded tip, the upper margin being straight and the lower one strongly curved, at just before the middle there is a distinct

furrow which is forming of a complete ring. Fronto-orbital bristles 2: 6; ocellar bristles finer than the vertical pair, but longer.

Thorax without front marginal and wing-basal spots, but praescutellar spot distinct; mesopleural bristles 3.

Abdomen with a large black round spot on the lateral portions of the 5th tergite.

Wings somewhat darker, but the S-like band paler and narrower; stigma nearly as long as  $\frac{2}{3}$  the second costal cell, darker; anal cell considerably shorter than  $M_1$ , and the posterior angle shortly produced, in *takeuchii* the anal cell as long as  $M_1$  and the posterior angle conspicuously produced;  $r_{4+5}$  nearly straight, parallel with  $m$ , bristly on the basal half of the upper side, but on the under side there is entirely no bristle;  $R_s$  narrow and long.

Legs pale yellow, pubescent and bristled as in *takeuchii*.

Length: Body 6.5 mm; wings 8 mm.

Only one male, collected by Mr. M. YOSHINO in Formosa (Musha VI), is preserved in the Entomological Museum of Government Research Institute, Taihoku, Formosa.

#### 76. *Pseudacidia sonani*, sp. nov.

(Fig. 51; Pl. VI, fig. 5)

Near to *yoshinoi*, but easily distinguished by the wing-pattern and by the small cross-vein which is placed in the middle of  $1M_2$ .

♀. Small, reddish yellow species, without black spot on thorax. Head orange-yellow, with the vertex and occiput reddish yellow; frons furnished with a very few black pubescence; vertex with a blackish brown ocellar dot; vertical calli large, but not well-elevated; face with broad and deep antennal grooves; cheeks conspicuously produced below, about  $\frac{1}{4}$  as long as the eye, with the very indistinct genal groove; vibrissal edge furnished with very sparse black bristly hairs; back of the head conspicuously swollen on the lower half at where it is very sparsely black-bristled. Eyes short, about as wide as  $\frac{3}{4}$  the height of the posterior margin being well-convex. Antennae yellowish brown, with

the apical joint orange-yellow; 3rd joint longer than the two preceding joints together, or about as long as twice the width, the under margin being moderately convex with the rounded apex; arista black, with the base yellow, microscopically pubescent, the basal joint being conspicuous; median seta of the second joint short. All the bristles black; inferior fronto-orbital bristles 7; ocellar bristles fine and very short, about a half as long as the vertical pairs which are strong; genal bristle rather conspicuous.

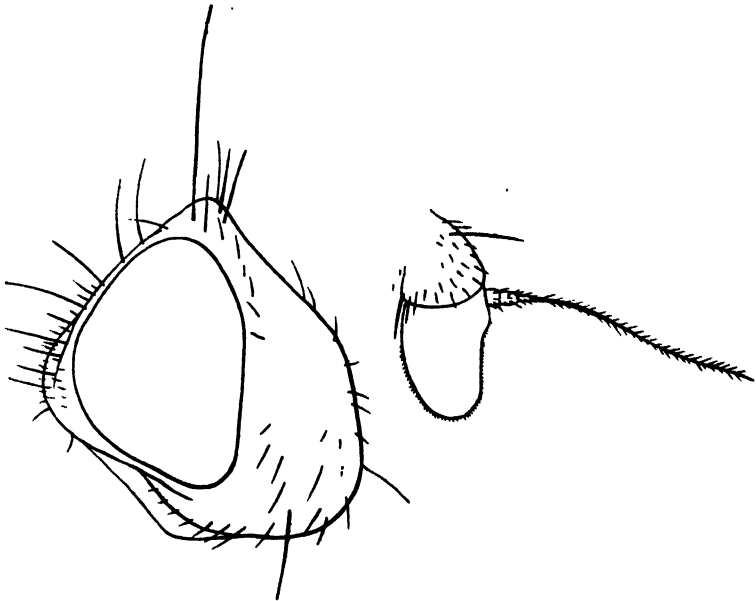


Fig. 51.

*Pseudacidia sonani*, sp. nov. ♀,  $\times$  ca 32. Left antenna,  $\times$  ca 48.

Thorax reddish yellow, with pleurae and scutellum light yellow, without any black spot but on the mesophragma there are two large black bands; mesopleural bristles 2, of which the lower one is about half as long as the upper one.

Abdomen rather narrow and long, orange-yellow, black pubescent and bristled; 6th tergite very little shorter than the preceding one; basal joint of ovipositor shining, blackish, a little shorter than wide, or distinctly shorter than the two preceding tergites together.



Wings hyaline, with yellowish brown veins and with two narrow  $\wedge$ -shaped brown bands; basal band more or less yellowish, beginning from the stigma, its apical branch extending straight to the posterior margin through over r-m and interrupted in  $1M_2$ , while its basal branch reaches the end of anal cell passing the basal cross veins and is not well-defined; apical band blackish, its one branch from the tip of  $R_1$  to the end of m along the costal and apical margin, and the other one straight, reaching the end of cu over m-cu and interrupted in the middle of  $R_4$ ; one very short brown cross band in  $R_1$ , extending to  $r_{4+5}$ ; stigma very little longer than a half the second costal cell;  $r_{4+5}$  distinctly curved apically, very sparsely bristled on the basal section of the upper side; m distinctly curved at the base of m-cu; r-m in the middle of  $1M_2$ ; anal cell broad, conspicuously shorter than  $M_1$ , the posterior angle being sharply pointed but not long.

Legs yellow, black pubescent and bristled.

Length: Body 5 mm; wings 6 mm.

Only one female, collected by Mr. J. SONAN in Formosa (Roeichi IX), is preserved in the Entomological Museum of Government Research Institute, Taihoku, Formosa.

#### 77. *Pseudacidia minowai*, sp. nov.

(Fig. 52; Pl. VI, fig. 6)

Small, shining reddish yellow; very distinct by 4 isolated yellowish bands of wings, and by the situation of dorso-central bristles which are nearer to the suture than to the praescutellar pair, the latter being very apart from the posterior margin of mesonotum.

♂ ♀. Head pale yellow; frons pale reddish yellow, conspicuously broader than the eye, covered with a dense depressed golden yellow pubescence intermixed by very few erect black hairs; vertex with a proportionally large black ocellar dot and the large vertical calli, the latter being paler than the frons; cheeks  $\frac{1}{2}$  as high as the eye, the genal groove being very indistinct and the bristles of vibrissal-edge rather sparse; back of the head moderately swollen, the lateral

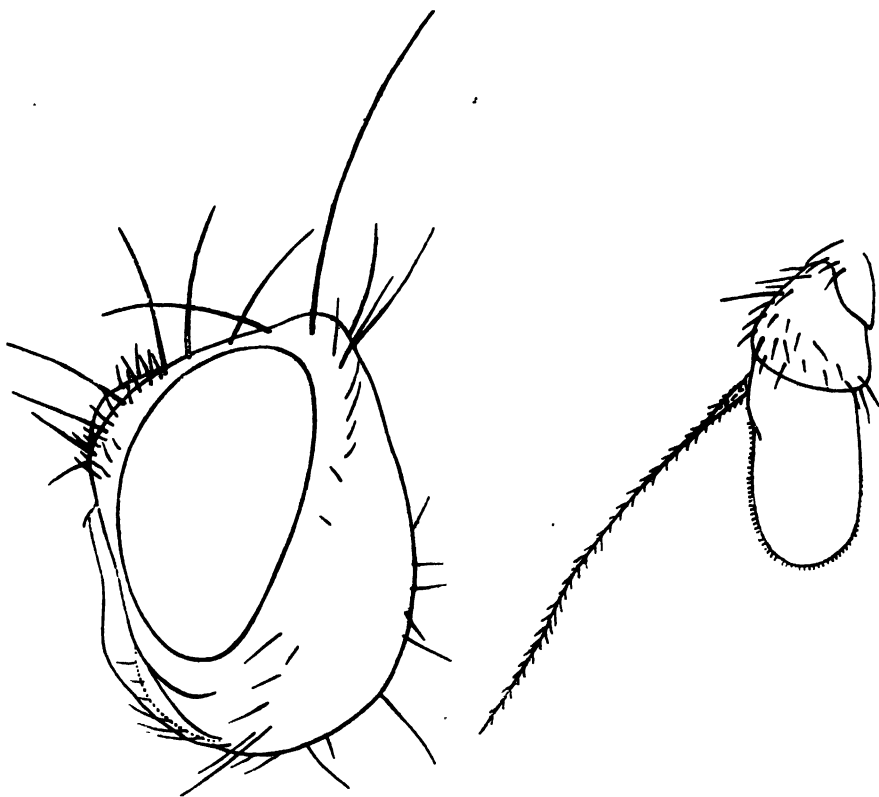


Fig. 52.

*Pseudacidia minowai*, sp. nov. ♀, × ca 50. Right antenna, × ca 88.

swellings whitish yellow and with a very few hairs. Eyes rather narrow, about as long as twice the width, the lower angle narrower than the upper one. Antennae pale yellow; 3rd joint longer than the two preceding joints together, or about as long as  $1\frac{1}{2}$  times the width, its upper margin straight and its lower margin strongly convex, with the narrowly rounded apex; arista black, with the base pale reddish yellow, the pubescence very short and black; median seta of the second joint shorter than the joint. Palpi pale yellow, rather broad, very sparsely bristled toward the rounded tip; proboscis moderate in size, light yellowish. All the bristles black; fronto-orbital bristles 2:3; ocellar bristles strong, longer than the inner pair of vertical bristles; genal bristle long.

Thorax reddish yellow, on the notum covered with a black pubescence, with the pleurae somewhat paler, on just behind the wing-bases there is a black dot; mesophragma with two black longitudinal bands. All the bristles black; dorso-central bristles on the line connecting the anterior supra-alar bristles; praescutellar bristles at just before the line connecting the hind posterior supra-alar bristles; mesopleural bristle one, strong; sternopleural bristle strong.

Abdomen shorter than the thorax, a little darker than the latter, black pubescent and bristled; 6th tergite of female distinctly shorter than the preceding one; basal joint of ovipositor blackish, shorter than wide or the two preceding tergites together; hypopygium castaneous; genitalia with yellowish appendages.

Wings hyaline, with four isolated yellowish bands; first two pale yellow, of which the basal one begins from the black stigma and reaches toward the tip of the anal cell passing over the basal cross veins, while the median band extends from the middle of the mouth of  $R_1$  to after the tip of cu through over r-m; apical band from the apical part of  $R_1$  to the tip of m, along the wing-margin, blackish toward the end; subapical band blackish and straight, placed on m-cu, extending anteriorly to  $r_{4+5}$ ; extreme-bases of wings somewhat yellowish; stigma about half as long as the second costal cell; r-m after the middle of  $1M_2$ ;  $r_{4+5}$  bristly on the both sides of the basal half, but on the upper side more conspicuous.

Legs pale yellow, black pubescent and bristled.

Length: Body 4-5 mm; wings 5.5-6 mm.

Hab. Formosa.-Nimandaira (Arisan IV); many specimens collected by Mr. S. MINOWA.

Types in the Entomological Museum of Government Research Institute, Taihoku, Formosa.

#### 78. *Pseudacidia ambigua*, sp. nov.

(Fig. 53; Pl. VII, fig. 2)

♀. Medium-sized species, orange-yellow with the abdomen pale castaneous. Frons orange-yellow, narrower than the eye, slightly

widened forwards, flat, not shining, very sparsely blackish pubescent; lunula blackish brown, greyish tomentose; vertex a little shining, with a distinct black ocellar dot; vertical calli very long, about as long as width of the vertex, well-defined, but not much elevated; face a little wider than long, with the upper mouth-edge reflexed, greyish brown, with the orange-yellow eye-margins, the latter being proportionally broad and nearly the same in width throughout; back of the head orange-yellow, with the lateral swellings dirty pale yellow and sparsely blackish pubescent; cheeks  $\frac{1}{8}$  as high as the eye, with a rather broad genal groove; vibrissal edge furnished with rather numerous black bristles. Antennae inserted distinctly below the middle of eyes; 3rd joint broken. Palpi yellowish, black pubescent, not narrowed toward the apices; proboscis brownish. All the bristles black; ocellar pair weak, much shorter than the fronto-orbital bristles, divergent; fronto-orbital bristles 2:3, strong, nearly the same in length; post-vertical bristles rather strong, longer than the ocellar one; bristles of occipital row very conspicuous; genal bristle rather weak.

Mesonotum orange-yellow, somewhat brownish, about  $1\frac{1}{2}$  times as long as wide, black pubescent; humeral calli pale yellowish; pleurae reddish yellow, with a whitish streak which extends from behind the humeral callus to the pleural suture of mesopleuron along the upper margin and is gradually broadened posteriorly; scutellum pale yellow, very sparsely pu-

bescent, on the lateral margins there is a row of three very short bristles between the basal and apical scutellar bristles; mesophragma with two very large quadrate black spots. All the bristles black

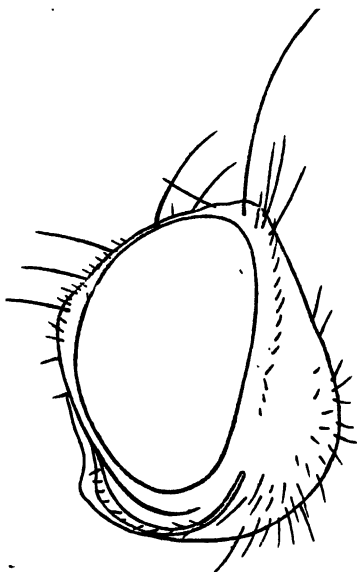


Fig. 53.

*Pseudacidia ambigua*, sp. nov.

♀, × ca 32.

and strong; mesopleural bristles 2; prothorax furnished with very weak bristles.

Abdomen strongly shining, pale castaneous, black pubescent and bristled; 4th and 5th tergites with a pair of black triangular lateral spots; 6th tergite entirely black, about  $\frac{2}{3}$  as long as the preceding one; basal joint of ovipositor depressed, black, much broader than long, about as long as the 5th tergite.

Wings narrow, longer than body, glass-hyaline, with blackish brown bands and apical spot; venation as in *Trypeta hamifera* LOEW, but  $r_{4+5}$  very sparsely bristly on the basal portion of the upper side; blackish pattern also as in *hamifera*, but the apical spot with its inner margin irregularly convex, the subapical band on m-cu extending above to  $r_{4+5}$ , the short submedian band narrower and longer, reaching  $r_{4+5}$  just before the tip of subapical band, and the median band gradually becoming paler and narrower towards the hind wing-margin and separating from the subapical band. Halteres yellowish, with the knob greyish; squamulae greyish.

Legs pale reddish yellow, black pubescent and bristled; median tibiae with a long spur and with 3 strong apical bristles.

Length: body 5.9 mm; wings 6.2 mm.

Only one female (type) from Arisan (X), Formosa, preserved in the Entomological Museum of Government Research Institute, Taihoku, Formosa.

#### 79. *Pseudacidia lineata*, sp. nov.

(Fig. 54; Pl. VII, fig. 3)

Rather near to *Acidia himalayensis*, BEZZI, but very easily distinguished by the chaetotaxy.

♀. Shining pale reddish yellow species, with pale yellow pleural stripe and broad black lateral streaks of abdomen; head in profile being right-angle at the base of antennae.

Frons orange-yellow, very faintly whitish tomentose toward the fronto-lateral margins and very sparsely blackish pubescent in the middle, a little wider than the eye, parallel-sided, flat; lunula whitish

tomentose, with the upper margin brownish; vertex with a blackish ocellar dot; vertical calli narrow and long, a little shorter than width of the vertex; face rather broad, with the upper mouth-edge not

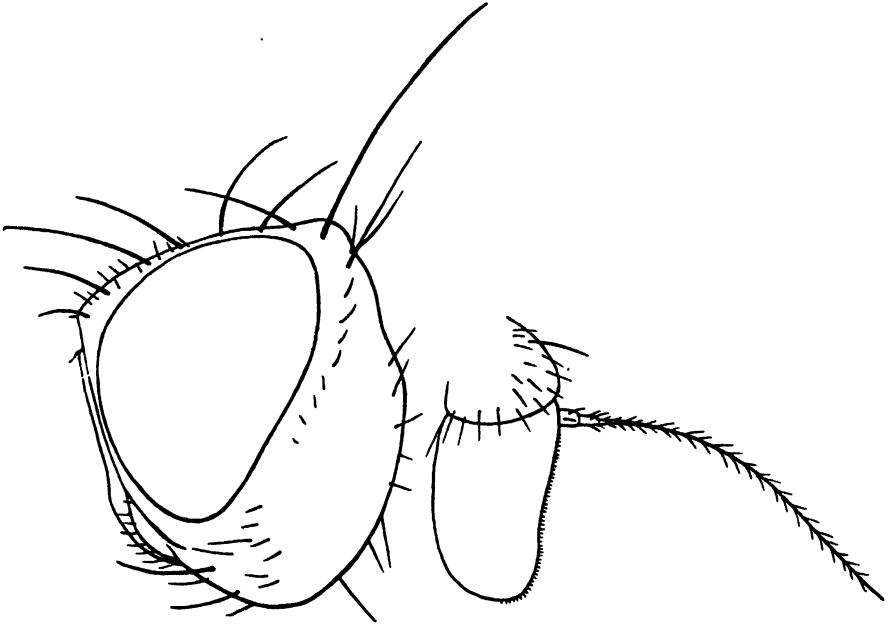


Fig. 54.

*Pseudacidia lineata*, sp. nov. ♀,  $\times$  ca 50. Left antenna,  $\times$  ca 88.

reflexed, somewhat greyish, the antennal grooves very shallow, and the eye-margins narrow; back of the head rather strongly convex, with the lateral swellings produced below, orange-yellow, very sparsely black pubescent; cheeks fully  $\frac{1}{8}$  as high as the eye which is somewhat sub-triangular and its anterior margin is very strongly convex; genal groove very inconspicuous; vibrissal-edge shortly black bristled. Antennae ochraceous; 3rd joint  $1\frac{1}{2}$  times as long as wide, narrowed toward the rounded apex, its upper margin nearly straight; arista longer than the antenna, black with the base reddish yellow, very shortly pubescent; 2nd joint black bristly on the inner side, with a long black median seta. Palpi orange-yellow, very sparsely black bristly; proboscis greyish yellow. All the bristles black; ocellar bristles as long as the upper superior

fronto-orbital one, the latter being shortest in all the fronto-orbital bristles; genal bristle strong, as long as the ocellar one; inner postvertical pair a little shorter than the ocellar bristle.

Mesonotum reddish yellow, black pubescent, with the humeral and notopleural calli pale orange-yellow; scutellum and pleurae pale reddish yellow, the latter with a pale yellow stripe on the upper margin of mesopleuron; mesophragma pale reddish yellow. All the bristles black; dorso-central pair at just behind the line connecting the anterior supra-alar bristles; mesopleural bristles 2, of which the lower one conspicuously shorter than the upper bristle; sternopleural very strong; pteropleural rather weak.

Abdomen long, pale reddish yellow, black pubescent and bristled, each the 3rd—6th tergites with a large entire dark castaneous lateral spot which on the 6th is triangular, and on the others is quadrate and its inner margin is notched in the middle; 6th tergite a little shorter than the 5th; basal joint of ovipositor black, as long as wide, or the two preceding tergites together.

Wings rather narrow, glass-hyaline, with three blackish brown bands. First band Y-shaped, its one branch beginning at the stigma, the other going over r-m united with the former at the tip of  $R_1$  and then extending the posterior wing-margin before the apex of Cu; second band narrower and rather straight, beginning at the fore wing-margin before the end of  $r_{2+3}$  and running over m-cu to the hind wing-margin; 3rd band forming a broad apical patch and passing a little beyond the end of m, united with the second band at the fore wing-margin and its inner margin angularly concave. An another oblique band, from the stigma to the apex of anal cell, very irregular, becoming very narrow posteriorly. Extreme bases of wings more or less yellowish; second costal cell with a small brown spot in the middle of the costal margin; stigma blackish brown, a little longer than a half the second costal cell; r-m rather near m-cu;  $r_{4+5}$  nearly parallel with m, very sparsely bristled on the upper side, and quite bare on the unders; anal cell very little shorter than  $M_1$ ;  $r_{2+3}$  straight. Halteres pale dirty yellow; squamae brownish.

Legs yellow, black pubescent and bristled; median spur long and black; bristle-row of front femora very prominent.

Length: Body 4.8 mm.; wings 5 mm.

Hab. Formosa—Musha (VI).

Type in the Entomological Museum of Government Research Institute, Taihoku, Formosa.

80. *Pseudacidia maculata*, sp. nov.

(Fig. 55; Pl. VII, fig. 4)

At once distinguished from the other species by narrow wings, as well as by very broad frons.

♂. Shining pale yellowish species of rather small-sized. Frons pale yellow, much broader than the eye, very slightly broadened forwards, flat, but distinctly elevated forwards, slightly covered with a whitish tomentum and with a few blackish pubescence all over the surface; lunula small, yellowish white; vertex with a rather conspicuous blackish ocellar dot; vertical calli narrow and about half as long as width of the vertex; face very much shorter than wide, whitish, its eye-margins being comparatively broad; back of the head reddish yellow, with the lateral swellings yellowish white and somewhat pubescent; cheeks about  $\frac{1}{6}$  as high as the eye; vibrissal edge being black bristled and genal groove rather indistinct. Antennae very pale yellow; 3rd joint whitish, about twice as long as wide, its upper margin nearly straight and its lower margin moderately convex, the tip being narrowly rounded; arista longer than the antenna, rather strong, blackish, with the basal  $\frac{2}{3}$  whitish, very shortly pubescent on the blackish portion; second joint furnished with very sparse blackish bristle-like hairs, the median seta being black and as long as the joint; first joint furnished with a few rather long blackish bristle-like hairs along its apical margin. Palpi pale reddish yellow, rather broad, not narrowed towards the rounded tip, sparsely bristled. Proboscis reddish brown. All the bristles black; ocellar bristles a little longer than the superior fronto-orbital or lower inferior fronto-orbital bristles, nearly parallel; inferior fronto-orbital bristles longer than the superior ones; postvertical bristles rather conspicuous; genal bristle as long as ocellar one.



Mesonotum rather small, pale yellow, black pubescent, humeral calli more or less whitish; scutellum and pleurae somewhat paler than the mesonotum, the second with a rather narrow whitish streak which

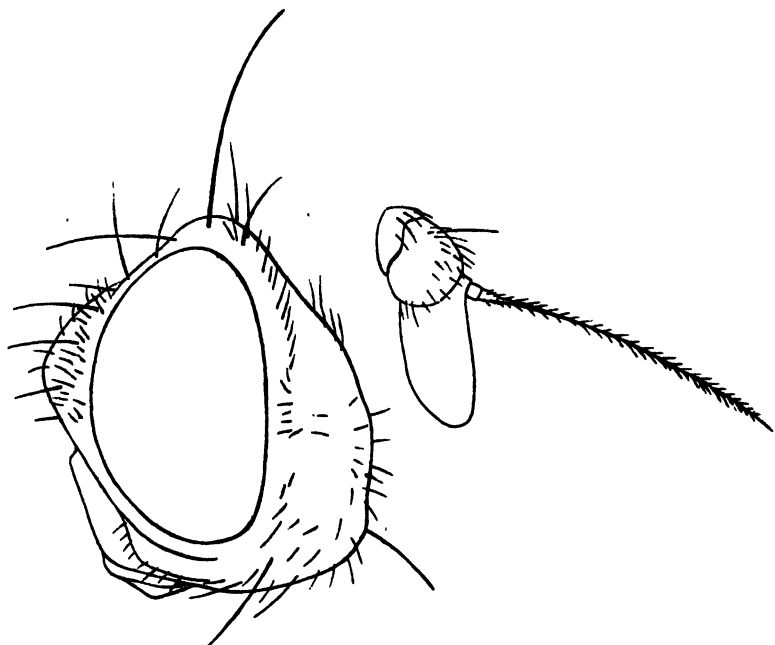


Fig. 55.

*Pseudacidia maculata*, sp. nov. ♂,  $\times$  ca 40. Left antenna,  $\times$  ca 48.

is extending from the humeral callus to the mesopleuron along its upper margin, at just behind the wing-bases there is a small black dot; mesophragma pale yellow. All the bristles black; propleural bristles 5, rather conspicuous; mesopleural bristles 2; ptero- and sternopleural very strong.

Abdomen brown, becoming yellowish toward the base, black pubescent and bristled; genitalia blackish, the ventral appendage yellowish with the tip black.

Wings longer than the body, distinctly narrowed toward the narrowly rounded tip, the posterior margin being conspicuously sinuated at the tip of cu, dark brown with hyaline spots; first costal cell, axillary lobe and the extreme base hyaline. Four costal indentations rather distinct;

the first two in the second costal cell smaller and subquadrate; the second two at just after the stigma placed very near from each other, of which the larger one along the tip of the stigma reaches to  $r_{4+5}$  at a little before  $r-m$ , and the smaller one extends to the middle of  $R_s$ . Four posterior marginal indentations larger than the costal ones, but not well-defined; two in  $IIM_2$  forming a large triangular spot, leaving very faint rather rounded dark middle portion between them; other two in  $Cu$ , of which the apical one is subquadrate and extends from the wing-margin to  $cu$  left a small triangular dark apical portion, and the second one is very large, occupying nearly the posterior half the  $Cu$  along the anal vein; in  $Cu$  there are two another hyaline spots, the basal one being very small and the other one placed in the middle of the cell and subquadrate. Five hyaline spots about the middle of wing, three in  $1M_2$ , one in  $R$  and the remaining in the base of  $R_s$ ; large longitudinal one near the base of  $1M_2$ , along  $cu$ ; smallest dot near the hind angle of  $1M_2$ ; one round medium-sized spot in  $1M_2$  just behind  $r-m$ . Stigma fully  $\frac{2}{3}$  as long as the second costal cell, well-pointed;  $R_s$  very narrow and long, very inconspicuously broadened toward the wing-margin;  $1M_2$  narrow and long, the anterior angle being nearly right-angled, because the vein  $m-cu$  is suddenly but slightly bent inwards; anal cell hardly as long as  $M$ . Halteres whitish, with the knob smoked.

Legs pale yellow, black pubescent and bristled.

Length: Body 4.6 mm; wings 6 mm.

Only one male (type) collected by Mr. K. TAKEUCHI at Minomo (V) near Osaka, Japan, preserved in the Entomological Museum of Government Research Institute, Taihoku, Formosa.

# 81. *Acidia japonica*, sp. nov.

(Fig. 56; Pl. VII, fig. 1)

Closely allied to *cognata* WIEDEMANN, but easily distinguished from it by the wing-pattern, and by the male genitalia.

♂ ♀. Shining reddish yellow. Frons usually very slightly broader than the eye, yellowish pubescent, its margins being white dusted;

lunula distinctly snow-white tomentose; vertex with a small black ocellar dot; vertical calli rather distinct and proportionally long, very slightly oblique (in *cognata* proportionally short and conspicuously oblique); face yellowish white, white tomentose, less broadened beneath than that in *cognata*; back of the head well convex, with the lateral swellings yellowish white, white tomentose and yellowish pubescent; cheeks about  $\frac{1}{3}$  as high as the eye, the latter distinctly narrowed beneath and its lower angle conspicuously narrower than the upper angle; vibrissal

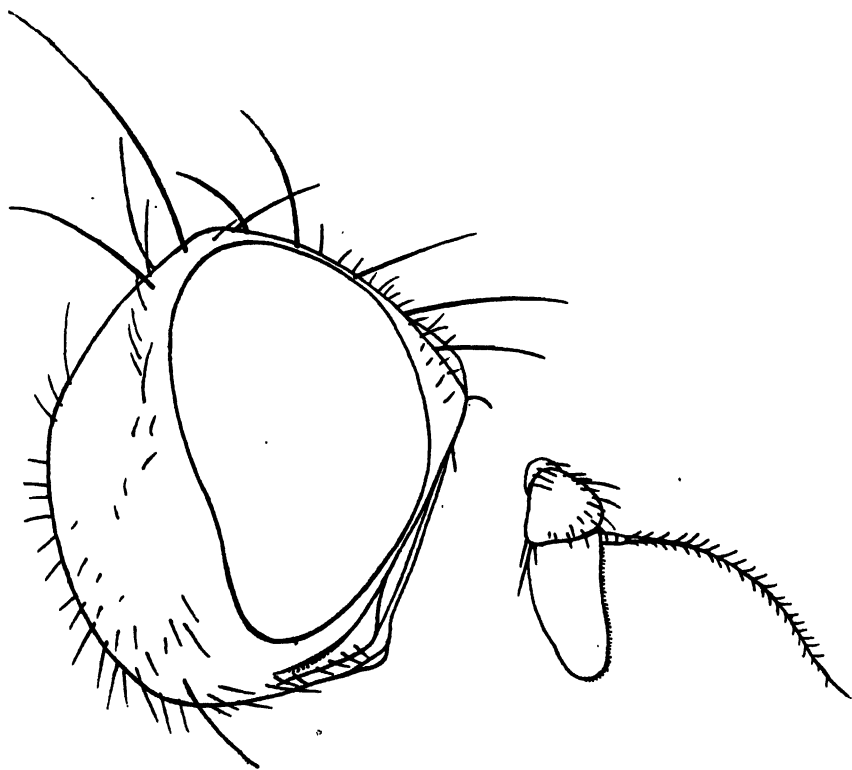


Fig. 56.

*Acidia japonica*, sp. nov. ♀,  $\times$  ca 35. Left antenna,  $\times$  ca 50.

edge furnished with yellowish bristly hairs. Antennae yellow, yellowish white pubescent; 3rd joint twice as long as wide (in *cognata* almost always a little longer than twice the width), or conspicuously longer than the two precedings together, slightly narrowed toward the rounded

apex; arista black, with the base yellowish, the pubescence being distinct and black; median seta of second joint very long and black. Palpi pale yellow, narrow, very slightly dilated toward the rounded tip, furnished with a few short black bristly hairs; proboscis yellow to brownish yellow. All the bristles black; fronto-orbital bristles 2:3; ocellar bristles short, very much shorter than the inner vertical pair; genal bristle distinct, rather strong.

Thorax reddish yellow, the disc yellowish pubescent, the pleurae and scutellum paler, from the humeral calli to the front bases of wings there is a greyish white streak along the upper margin of pleurae; mesophragma with two broad black streaks. All the bristles black; propleural bristles almost always two or three; sternopleural wanted; mesopleural 2, rather weak, the inferior one being much weaker; dorso-central pair very near to praescutellar bristles.

Abdomen short, but broader than the thorax, reddish brown, black pubescent and bristled; 6th tergite of female short, very little longer than a half the 5th; basal joint of ovipositor reddish yellow, a little longer than wide or the 5th tergite; hypopygium very small, reddish yellow; genitalia large, yellowish, with the ventral appendage narrow and long and with two very minute black apical teeth, and with the dorsal appendage very large, lobe-like, conspicuously longer than the ventral one and strongly compressed laterally.

Wings broad; pale yellow; browned toward the tip, with 5 hyaline indentations and 5 hyaline spots, the anal lobe being hyaline. Two costal indentations of which the first one, at just after the stigma, is triangular and extends to a little before the base of r-m, while the second one, from the middle of the mouth of  $R_1$  to just after r-m in  $R_1$ , is band-like and is about as wide as the first indentation; two others, from the posterior margin near the wing-tip, of which the apical one is narrow and oblique, extending from the tip of m to the apical one-third of  $R_1$ , and the subapical one is large and triangular, placed in  $IIM_2$  and extended toward the middle of  $R_1$ , the dividing streak between those two indentations being narrow and rarely not entire; one remaining indentation in Cu formed a very broad oblique band along

the outside of the anal vein. Five hyaline spots as follows: One largest spot, at the apical part of  $1M_2$ , is parallel with m-cu and extends to Cu; a smallest one is at the base of  $R_1$ ; each the three remainings placed in the second costal and second basal cells and at the tip of R respectively. Stigma blackish brown, half as long as the second costal cell;  $r_{4+5}$  undulate, distinctly bristled on the upper side of the basal half, but on the under side there are only two or three bristles; r-m in the middle of  $1M_2$  (in *cognata* almost always a little after the middle); anal cell shorter than the second basal cell, drawn out into the narrowly pointed lower angle.

Legs pale yellow, slender, black pubescent and bristled; spur of middle tibiae short, about  $\frac{1}{4}$  as long as the metatarsi.

Length: Body 6.5–7.5 mm; wings 7.5–8.5 mm.

Hab. Japan—Sapporo (VIII), Aomori (VIII), Kamikochi (VIII).

Types in the Entomological Museum of Government Research Institute, Taihoku, Formosa.

### XXXIII. Genus **VIDALIA**, ROBINEAU-DESVOIDY

Essai sur les Myodaires, p. 719 (1830)

*Stemonocera*, RONDANI, Prodr. VII., Ortalid., p. 30 (1870).

*Straussia*, ENDERLEIN (nec R.-D.), BROHMER, Faun. Deutschland. p. 302, (1930)

Genotype—*Vidalia impressifrons*, R.-D., from India.

Head as high as broad or broader than high, about as wide as the thorax; frons of male distinctly broader than the eye and widened forwards, but of female about as wide as the latter and very narrowed forwards, the lateral borders being strongly elevated or often forming a horn-like process in the male; lunula distinct; vertex distinctly carinate, with the very short vertical calli; back of the head rather flat, in the lower half moderately swollen; cheeks more or less broad; vibrissal edge shortly bristled; genal groove more or less distinct; face flat, moderate in width, with the upper mouth-edge distinctly reflexed. Eyes small or large, rather narrow; the posterior margin very slightly curved outwards and the anterior margin conspicuously; the upper angle a little

narrower than the lower one, the both being rounded. Antennae distinctly shorter than the face; 3rd joint short, about  $1\frac{1}{2}$  times as long as the 2nd, rounded at the tip; arista shortly pubescent. Palpi small, more or less bristly.

Mesonotum distinctly longer than wide, convex above; scutellum triangular, flattened above.

Abdomen moderately broad, not longer than the thorax; 6th tergite of female shorter than the 5th, furnished with some long bristles at the tip; 5th tergite of male not very long, about as long as the preceding one, furnished with bristles as in the 6th of female; basal joint of ovipositor longer than the 6th tergite, more or less flattened, shorter than wide, not distinctly bristled at the tip.

Wings moderate in size, with an indistinct small costal spine; stigma moderate in length, pointed; anal cell about as long as or a little longer than the second basal cell, drawn out into a narrow point; all the veins rather straight;  $r_{4+5}$  bristly on the upper and under sides of the basal half, but on the under side very sparsely;  $r-m$  behind the middle of  $1M_2$ ;  $m-cu$  perpendicular.

Legs rather short; middle tibiae with a single apical spur; hind tibiae with a row of bristles on the outer margin.

Chaetotaxy complete but ocellar bristles wanting or very indistinct; fronto-orbital bristles variable in number, 1-2: 2-5; inner vertical bristles very much longer than the outer pair; postvertical bristles weak, not divergent; bristles of occipital row thick; genal bristle strong; dorso-central bristles behind the line connecting the anterior supra-alar bristles, nearer to the latter than to the praescutellar one; propleural bristles very weak; mesopleural bristles 2; sterno- and ptero-pleural bristles strong; scutellar bristles 4; all the bristles black.

Only one species from Formosa.

## 82. *Vidalia bidens*, HENDEL.

Ann. Mus. Nat. Hung. XIII., p. 443 (1915).

♂ ♀. Reddish yellow species of small-sized. Frons reddish yellow, but slightly darkened toward the vertex, white tomentose, strongly con-

cave, narrowed forwards; in the female narrower than the eye; in the male wider than the eye, with the lateral borders moderately elevated, at the tip of vertical calli there is a conspicuous conical process and at the base of upper inferior fronto-orbital bristle a small tubercle, the both being rarely not prominent; vertex with a minute black ocellar dot, with the vertical calli strongly shining and in the male rather broad; face pale yellowish, white-dusted, shorter than the frons and slightly concave, with the upper mouth-edge moderately deflexed, in profile rather slightly oblique; cheeks narrow, with the broad and shallow genal groove; vibrissal edge furnished with rather few yellowish bristly hairs; jowls furnished with many yellowish bristly hairs; back of the head rather flat, reddish yellow, with the narrow eye-margins yellow. Eyes large. Antennae pale yellow; 3rd joint with the upper margin nearly straight and with the under margin strongly convex, pale yellow pubescent; median seta of the second joint longer than that, black; arista longer than the antenna, black, with the base yellow. Palpi pale yellow, furnished with some short pale yellow bristly hairs, at the tip there are two or three black bristles. All the bristles black; fronto-orbital bristles 1: 2 (♂)-4 (♀), the superior one being rather short and the inferior bristles longer and stronger, of which the upper inferior one in the male is very stronger and longer; ocellar bristles wanting, or if present very weak.

Mesonotum shining, reddish yellow, covered with numerous short yellow pubescence and slightly with a whitish tomentum; pleurae paler than the notum, covered with a few black pubescence, with a rather broad yellowish white upper streak which extends from humeral callus to mesopleuron; scutellum shining pale yellow, bare from pubescence and tomentum, subtriangular; mesophragma shining reddish yellow. All the bristles black, strong, excepting of propleural and acrostichal bristles; dorso-central bristles at just behind the line connecting between the anterior supra-alar bristles.

Abdomen shining reddish yellow, with two (♂) or three (♀) apical segments black, black pubescent and bristled; ovipositor shining black; hypopygium shining black, with rather long yellowish genital appendages.

Wings as long as body, rather narrow; stigma as long as a half the second costal cell; anal cell a little longer than M; r-m conspicuously after the middle of  $1M_2$ ; last portion of m and  $r_{4+5}$  parallel. Blackish, with the axillary lobes hyaline, and with 5 hyaline indentations, of which two costal ones are triangular and the same in size, extending posteriorly to the vein  $r_{4+5}$ , the first one being placed at just outside the stigma. Another three indentations, at the posterior margin; the basal one, in Cu, largest; the middle one, near the end of  $1M_2$ , parallel with m-cu and the same in width throughout the whole length, connecting with a small round hyaline dot in  $R_5$  along m; the apical one placed in  $11M_2$ , only leaving very narrow inner and antero-apical blackish portions, and connecting with a oval hyaline spot in the middle of  $R_1$ . One longitudinal oblong hyaline spot, in the middle of R; an other small spot, at just below the second costal cell, extending very narrowly to the apical end of M; second costal cell hyaline, its basal and middle portions being more or less yellowish; stigma black. Halteres reddish yellow.

Legs orange yellow, black pubescent and bristled.

Length: Body 4.5-5 mm ( $\delta$  ♀); wings 4.5-5 mm ( $\delta$  ♀).

Hab. Formosa—Hozan (VIII), Koshun (III), Bakurasu (IV), Musha (V), Jujiro (Arisan IV); Taichu (XII).

Types in the National Museum of Hungary, Budapest. This handsom flies are often captured on the flowers of *Tetrapanax papyrifera* KOCH.

#### XXXIV. Genus **MORITSUGIA**, nov.

The present genus is considerably different in frons, lunula and antennae from all the genera found in the Japanese countries, and shows a form between the genera, *Vidalia* and *Aischrocrania*. It is at once distinguished from the former by the strongly sunken lunula as well as by the proportionally long basal and rounded apical joints of antennae; and from the latter by no ocellar bristle, by the fewer fronto-orbital bristles (2: 3), and by the situation of antennae.

Genotype: *Moritsugia quadrimaculata*, sp. nov.



Head narrower than the thorax, nearly as long as a half the width, distinctly higher than long; frons very broad, conspicuously wider than the eye or very little longer than wide, strongly concave, its lateral margins being conspicuously elevated and its fore margin enormously sinuated; lunula deeply sunk entirely; vertex not carinate, with the vertical calli widely apart from the eye-margins; face broader than long, strongly concave, with the upper mouth-edge not reflexed, and with the eye-margins being very narrow; vibrissal edge moderately bristled; back of the head flat above, conspicuously swollen below; cheeks moderate in shape, about as high as  $\frac{1}{2}$  the eye. Antennae inserted distinctly below the middle of eyes; first joint very little shorter than the second, more or less broadened apically, the apex furnished with a few bristle-like hairs; 2nd joint about as long as wide, its inner apex being more or less produced and furnished with many bristle-like hairs; median seta of the second joint rather weak, not conspicuous; 3rd joint oval, very little longer than wide, broadest in the middle and rounded at the apex; arista short-pubescent. Palpi narrow and long, nearly the same in width throughout the whole length and distinctly curved upwards. Eyes in profile, about half as long as high, with the anterior margin strongly convex, the posterior margin slightly convex, and the upper angle rounded and much narrower than the lower angle.

Mesonotum about  $1\frac{1}{2}$  times as long as wide, moderately convex above; scutellum subtriangular, slightly convex above.

Abdomen small, shorter than the mesonotum, rather flat; 6th tergite very little shorter than the 5th; the basal joint of ovipositor depressed, very broad, nearly as long as the 6th tergite.

Wings proportionally large, hyaline, with blackish bands; costal bristle only one, distinct but very short, in the middle of costal margin of the first costal cell there is a long prominent basal costal bristle; stigma pointed, about  $\frac{2}{3}$  as long as the 2nd costal cell; anal cell shorter than M, with the narrowly producing posterior angle;  $r_{2+3}$  nearly straight;  $r_{4+5}$  more or less undulate, sparsely bristled only on the upper side;  $r-m$  after the middle of 1M, not parallel with  $m-cu$  but divergent anteriorly.

Legs as usual.

Chaetotaxy: Ocellar bristle wanting; fronto-orbital 2: 3; postvertical rather weak; bristles of the occipital row very sparse; genal not strong; dorso-central far behind the line connecting the anterior supra-alar bristles; bristle-row of the prothorax conspicuous; sterno-pleural, pteropleural and praesutural bristles strong; mesopleural two; scutellar 2 pairs.

Only one species found in our insect-fauna.

83. *Moritsugia quadrimaculata*, sp. nov.

(Fig. 57; Pl. VII, fig. 5)

♀. Pale reddish-yellow, with legs pale yellow; abdomen with 2 pairs of black patches; metanotum with two black spots; wings with 4 blackish bands.

Frons orange-yellow, very faintly white-tomentose and very sparsely brown-pubescent, somewhat darkened toward the vertex which has a very small brown ocellar dot; vertical calli about  $\frac{1}{3}$  as long as the width of the vertex; lunula strongly shining, brownish; face very pale reddish yellow, more or less shining, with the antennal grooves distinct and with the eye-margins orange-yellow; back of the head pale orange-yellow, brownish dotted in the upper portion, blackish pubescent in the lower portion; cheeks orange-yellow, with the genal groove indistinct. Antennae orange-yellow, black bristly; arista black, with the base yellowish, black pubescent. Palpi pale yellow, furnished with a few black bristle-like hairs; proboscis dirty yellow. All the bristles black; upper superior fronto-orbital bristle weak, as long as the inner postvertical one; inner vertical very strong, about twice as long as the outer one.

Mesonotum shining reddish yellow, black pubescent, with the humeral calli yellow; scutellum paler than the mesonotum, irregularly reddish brown dotted; mesophragma shining pale reddish yellow, with two very large subquadrate blackish patches; pleurae paler than the mesonotum, with a distinct but rather narrow yellow so-called noto-

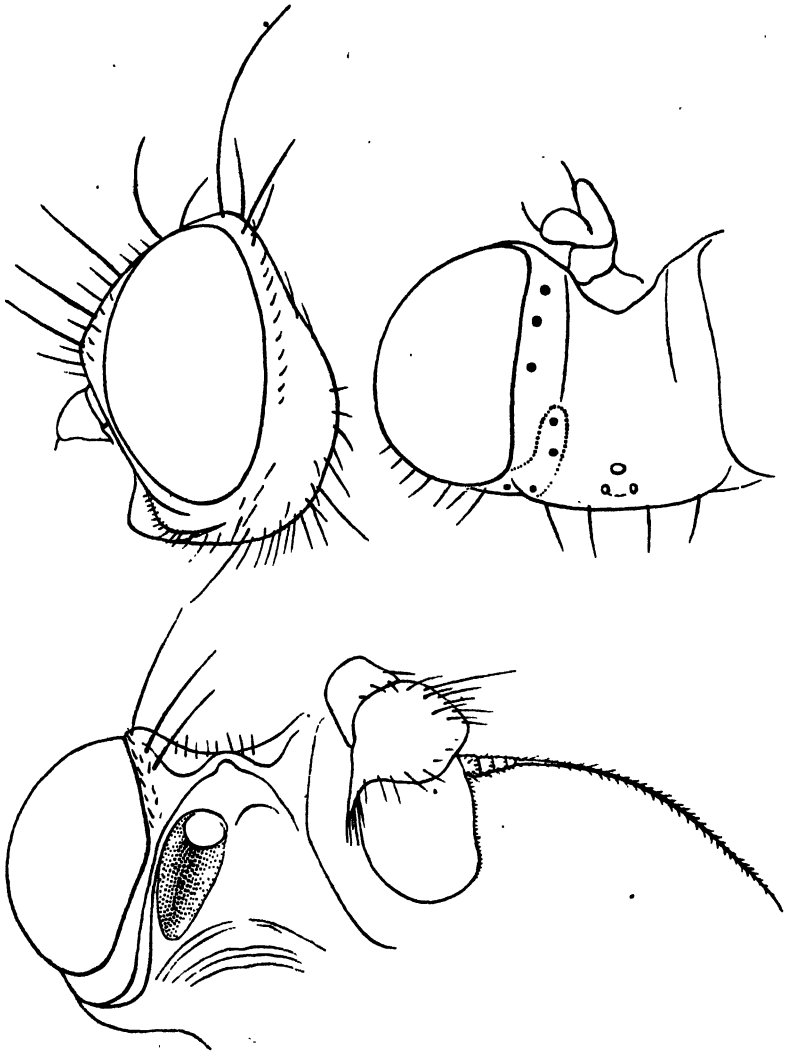


Fig. 57.

*Moritsugia quadrimaculata*, sp. nov. ♀,  $\times$  ca 28. Left antenna,  $\times$  ca 48.

pleural streak. All the bristles black; propleural bristles 3; two mesopleural bristles strong, nearly the same in length.

Abdomen shining pale orange-yellow, black pubescent and bristled, on the 4th and 5th tergites there are two pairs of transverse blackish brown lateral patches; basal joint of ovipositor shining black.

Wings distinctly longer than the body, hyaline with the veins blackish brown. Wing-pattern as follows: First band irregular, placed along the outer border of M and extended from the stigma to the end of the anal cell; 2nd band broader than the preceding one, somewhat curved outwards, beginning the stigma and reaching at before the apex of Cu, slightly narrowed posteriorly; 3rd band straight and narrower than the first one along on m-cu, extending anteriorly to the costal margin and posteriorly to the tip of cu; fourth band very broad, forming a curved apical patch and united with the 3rd band, extending below m, along the wing-margin; far after the stigma there is a narrow band-like spot, which extends from the costal margin to  $r_{4+5}$ . Halteres and squamulae somewhat greyish, the former possessing blackish knob.

Legs pale yellow, black pubescent and bristled; spur of intermediate tibiae black,  $\frac{1}{3}$  as long as the metatarsus.

Length: Body 5.3 mm; wings 6.5 mm.

Only one female captured by Mr. A. MORITSUGU in Taihoku (IV), Formosa; preserved in the Entomological Museum of Government Research Institute, Taihoku, Formosa.

### XXXV. Genus MYIOLIA, RONDANI

*Myioleja*, RONDANI, Prodr. I., p. 112 (1856).

*Euleia*, WALKER, Ent. Mag. III., p. 72 (1836).

Subg. *Acidiella*, HENDEL, Wien. Ent. Zeit. XXXIII., p. 83, (1914).

Subg. *Acidiostigma*, HENDEL, Lindner, Flieg. Palaearkt., 49, p. 101 (1927).

This genus very closely allied to the genus *Acidia*, chiefly distinguished from the latter by no distinct propleural bristle.

Head a little narrower than the thorax, broader than high or conspicuously shorter than long; frons broader or narrower than the eye, always distinctly longer than wide, parallel-sided or very slightly broadened forwards; lunula moderate in size; vertex carinate, with the rather short vertical calli, which are distinctly shorter than a half the frons and are not broad; face moderately convex, but when seen from side straight or very slightly concave above the upper mouth-edge; with the antennal grooves normal, and the eye-margins rather narrow

and distinctly broadened beneath; back of the head normal; cheeks  $\frac{1}{2}$  to  $\frac{3}{4}$  as high as the eye, with the vibrissal edge shortly bristled. Eyes rather narrow, narrower than a half the length, the posterior margin being slightly curved outwards, and the anterior margin uniformly curved outwards. Antennae inserted at the middle of eyes, not reaching to the upper mouth-edge; 3rd joint  $1\frac{1}{2}$ - $2\frac{1}{2}$  times as long as wide, rounded or obtusely rounded at the tip. Palpi rather narrow, slightly curved upwards, rounded at the tip, moderately bristly; proboscis normal.

Mesonotum slightly longer than wide, conspicuously convex above, broadest behind the middle; scutellum rather small, subtriangular, conspicuously convex above.

Abdomen oval, shorter than the thorax, distinctly bristled at the tip; 5th tergite of male about as long as the two precedings together; 6th tergite of female shorter than the 5th; ovipositor short, depressed, its basal joint being conspicuously broader than long or about as long as the 5th tergite; male-genitalia rather prominent.

Wings broad or narrow, with two short costal spines; stigma shorter than the second costal cell (except for the subgenus *Acidiostigma*), pointed; anal cell about as long as M, drawn out into a pointed lower angle;  $1M_2$  with the obtuse or more or less pointed lower angle;  $r_{2+3}$  straight or very slightly wavy;  $r_{4+5}$  parallel or divergent with m, distinctly bristled on the basal half or rarely only at the base; r-m after the middle of  $1M_2$ , perpendicular, or more or less oblique; m-cu perpendicular, or more or less oblique, straight or very slightly curved outwards.

Legs moderate in length; front femora distinctly bristled; middle tibiae with a single spur; hind tibiae with a row of very short bristles; hind femora with a few bristles near the apex.

Chaetotaxy complete; ocellar bristles moderately long; fronto orbital bristles 2:3; inner vertical bristles longer than the outer pair; postvertical weak, not divergent; genal rather weak; prothorax with a row of yellow bristly hairs, or with one or two black ones; dorso-central behind the line connecting the anterior supra-alar bristles;

mesopleural almost always one; ptero- and sternopleural not very strong; notopleural 2; scutellar 4; all bristles black.

Key to the Japanese species.

- A.  $r_{4+5}$  parallel with m ..... Subg. *Acidiella*, HENDEL.
1. Lower angle of  $IM_2$  not obtuse, more or less pointed.
    2.  $R$  with a hyaline spot.
      3.  $R_5$  with two hyaline spots.
        4.  $IM_2$  with a hyaline spot and a streak ..... *japonica*, HENDEL.
        44.  $IM_2$  without hyaline spot nor streak, but the basal third yellowish ...  
..... *naganoensis*, sp. nov.
      33.  $R_5$  with a hyaline spot.
        4. The hyaline spot in  $R_5$  connected with the large triangular spot in  $IIM_2$ ;  $IM_2$  with a hyaline apical band and a basal streak .....  
..... *longipennis*, HENDEL.
        44. The hyaline spot in  $R_5$  very small and isolated;  $IM_2$  with two isolated hyaline apical spots and a basal streak ..... *persimilis*, HENDEL.
    22.  $R$  without hyaline spot, entirely black;  $R_5$  with a small isolated hyaline spot;  $IM_2$  with a hyaline apical band. .... *arisanica*, sp. nov.
  11. Lower angle of  $IM_2$  obtuse.
    2. The costal hyaline indentations not extending below to  $IM_2$ , but to  $r_{4+5}$ ;  $R_5$  with two hyaline spots;  $IM_2$  with a hyaline apical spot near m .....  
..... *kagoshimensis*, MIYAKE.
    22. The costal hyaline indentation pointed below, the 2nd one extending below to  $IM_2$ ; two hyaline bands extending from  $R_5$  to  $IIM_2$ , the 2nd one being triangular ..... *mushaensis*, sp. nov.
- B.  $r_{4+5}$  divergent with m ..... Subg. *Myiolia*, RONDANI.
1. Wings mainly black.
    2. Wings with a Y-shaped hyaline spot in the middle ..... *formosana*, sp. nov.
    22. Wings with two hyaline triangular indentations on the costal margin .....  
..... *marumoi*, MIYAKE.
  11. Wings mainly pale yellowish hyaline, with brownish bands;  $r_{4+5}$  rather parallel with m ..... *flavonigra*, HENDEL.

84. *Acidiella japonica*, HENDEL.

LINDNER, Fl. Palaearkt. 49, p. 103 (1927).

"Stirne  $1\frac{1}{2}$  mal so breit wie ein Auge,  $1\frac{1}{2}$  mal so lang wie breit. Färbung wie bei *amuricola*. Die kurze Pubeszenz von Thoraxrücken

und Abdomen ist aber schwarz. Die Flügelzeichnung ähnelt sehr der *kagoshimensis*, deren Flügelbild man vergleiche. Die 2 trapezförmigen Randeinschnitte der Cm ( $R_1$ ) erreichen hinten den  $r_{4+5}$ , nicht und sind dort abgerundet. Ihr brauner schmaler Zwischenraum liegt genau oberhalb des  $ta$  ( $r-m$ ), nicht jenseits desselben wie bei letztgenannter Art. Der untere äussere Winkel der Cd ( $1M_2$ ) ist spitz (nicht stumpf); in der  $Cp_1$  ( $R_5$ ) liegt ausser dem einen weissen Tropfen oberhalb des  $tp$  ( $m-cu$ ) noch einer an der  $m$ , weiter auswärts. Im Spitzendrittel der Cd liegt ein kreisrunder weisser Tropfen, der innen von der Verlängerung des  $ta$  tangiert wird. Im Basaldrittel der Cd liegt ein längsovaler weisser Fleck dem  $cu$  an. In der  $Cp_3$  ( $Cu$ ) liegt dem mittleren Drittel der Länge der Cd ein trapezförmiger brauner Fleck an, der mit seiner Schmalseite den Flügelhinterrand an der Längsfalte dieser Zelle berührt. Mündung des  $cu$  beiderseits braun gesäumt. Flügel länger und schmaler als bei *kagoshimensis*. Der letzte Abschnitt der  $m$  ist 4 mal so lang wie der vorletzte. Körper und Flügel 5 mm."

Hab. Japan (Kyoto)

Type in the Natural History Museum of Wien.

# 85. *Acidiella naganoensis*, sp. nov.

(Fig. 58)

Distinguished by the situation of  $r-m$ , which is placed a little after the middle of  $1M_2$ .

♀. Pale yellow species of rather large-sized. Frons pale yellow, a little broader than the eye, parallel-sided, more or less convex but very slightly concave in the middle just before the ocellar triangle, covered with a few brown pubescence in the middle, and very faintly greyish tomentose; lunula small, whitish tomentose; vertex with a small blackish ocellar dot, and with the well-defined vertical calli which are straight and not strongly shining; face yellowish white, with the broad and shallow antennal grooves, and the very narrow eye-margins; back of the head flat in the upper half and moderately swollen in the lower half, moderately shining yellow, becoming paler towards the jowls which are

covered with some brown hairs; cheeks narrow, about  $\frac{1}{2}$  as high as the eye, with a distinct genal groove; vibrissal edge with a few short black bristly hairs. Antennae pale yellow, short; 3rd joint about twice as

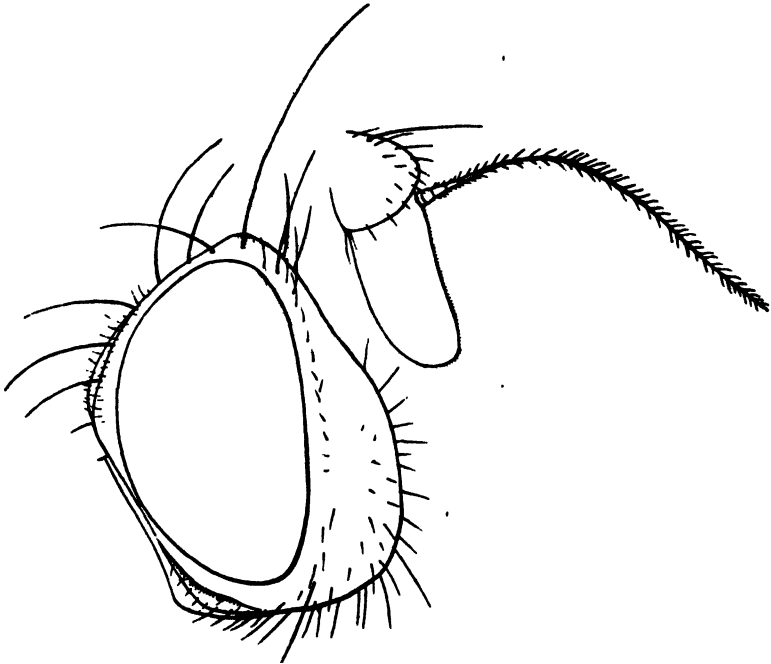


Fig. 58.

*Acidiella nagoensis*, sp. nov. ♀ × ca 28. Left antenna × ca 48.

long as wide, very slightly narrowed towards the rounded tip; median seta of the second joint black, not strong but as long as the joint. Palpi yellowish white, proportionally short, furnished with some pale yellow bristly hairs, but on the tip there are 2 or 3 black bristles; proboscis brownish. All the bristles black and strong; ocellar bristles as long as the upper superior fronto-orbital one; postvertical bristles rather strong, a little shorter than the ocellar one, parallel; genal bristle a little shorter and finer than the postvertical.

Mesonotum pale orange yellow, covered with numerous very short black pubescence and a few greyish tomentum, with a pair of very fine and faint, interrupted at the suture, brown submedian stripes,



which extend from the bases of outer scapular bristles to the roots of dorso-central bristles; pleurae pale yellow, very sparsely blackish pubescent; scutellum slightly paler than the mesonotum; mesophragma shining black. All the bristles black and strong; dorso-central bristles at just behind the line connecting the anterior supra-alar bristles; propleural bristle distinct; mesopleural bristles two; ptero- and sternopleural bristles rather strong.

Abdomen shining yellow, black pubescent and bristled; each the 3rd—5th tergites with a broad blackish band which is not reaching to the lateral margins in each tergite, and on the 5th tergite it is distinctly darkened and is somewhat interrupted in the middle; 6th tergite very little shorter than the 5th; basal joint of ovipositor castaneous, with its lateral margins very narrowly yellow, and with one pair of small yellow spots.

Wings rather broad, blackish but yellowish toward the base; axillary lobe, costal cells, base of  $R_1$ ,  $M$  and posterior half of  $Cu$ , hyaline; stigma black; second costal cell with a large round blackish median spot, the base being yellow. Hyaline spots as follows: Two costal indentations somewhat triangular, reaching to  $r_{4+5}$  and rather far apart from each other; hind marginal indentations oblong, of which the apical one is larger and is placed near  $m-cu$ , the second one is somewhat quadrate and is placed rather far before  $m-cu$  in  $Cu$ , in the latter cell there is two another hyaline spots in the basal half along  $cu$ ; two, far apart from each other, rounded spots in  $R_5$ , of which the basal one is much larger and is placed near  $r-m$ , and the rest in middle of the cell, is very small; one round, in  $R$ , a little smaller than the basal spot in  $R_5$ . Stigma subtriangular, about a half as long as the second costal cell; anal cell a little shorter than  $M$ ;  $1M_2$  with more or less pointed lower angle, with the base distinctly paler,  $r-m$  very slightly concave, very little after the middle of  $1M_2$ ;  $r_{4+5}$  and  $m$  parallel. Halteres pale yellowish, much paler toward the knob.

Legs pale yellow, mainly yellowish white pubescent and black bristled.

Length: Body and wings 6 mm.

Hab. Japan - Nagano (VII).

Type in the Entomological Museum of Government Research Institute, Taihoku, Formosa.

86. *Acidiella longipennis*, HENDEL.

Ann. Mus. Nat. Hung. XIII., p. 457, ♂ (1915)

♂ ♀. Head yellowish, narrower than the thorax, semicircular, about as long as a half the width. Frons rather narrow, about twice as long as broad and distinctly narrower than one-third the width of the head, parallel-sided, nearly flat, brownish orange coloured, with the greyish eye-margins, and with the pubescence black and rather distinct but very few; vertex with a black ocellar dot. Bristles on the head rather strong, black; inferior fronto-orbital bristles 3, the lower one of which is a little shorter than the two others; lower superior fronto-orbital bristle distinctly stouter than the inferior ones but not longer than the upper pairs of the latter, the upper superior fronto-orbital bristle being as long as the lower inferior fronto-orbital one but a little stouter; ocellar bristles strong, divergent, nearly as long as the upper inferior fronto-orbital one, but rather finer; inner pair of vertical bristles very stout and nearly as long as the length of frons, the outer pair being finer than or about  $\frac{2}{3}$  as long as the inner pair; postvertical bristles nearly parallel, about as long as the ocellar bristles; bristles of the occipital row about a half as long as the postvertical bristles, not homogenous in length but in thickness nearly so; genal bristle rather strong, a little longer than the lower inferior fronto-orbital bristle. Face a little longer than broad, distinctly widened toward the mouth-edge, distinctly excavate but in the middle portion especially near the mouth-margin elevated but not carinate, with the very narrow eye-margins. Back of the head very slightly hollowed in the upper portion, with 4 fine blackish longitudinal stripes, the inner pair of which is not reaching the upper border; the lower portion moderately swollen, with a few short black bristle-like hairs. Cheeks rather short, with the distinct genal groove; vibrissal edge furnished with very few

rather conspicuous black bristles; jowls covered with a rather numerous long pale hairs. Antennae about  $\frac{2}{3}$  as long as the face, dirty yellow; first joint very tiny, on the upper apical margin bearing a few sparse conspicuous black bristle-like pubescence; second joint rather large, conical, about  $2\frac{1}{2}$  times as long as the first joint, with numerous inconspicuous tiny black bristle-like hairs, and near the base with a very conspicuous long black median seta; third joint distinctly longer than the two precedings together or about  $1\frac{1}{2}$  times as long as broad, its dorsal margin being nearly straight and its lower margin at the apical half strongly curved outwards, with the more or less pointed apex; arista brown, with the pale yellow thickened base, about  $1\frac{1}{2}$  times as long as the antenna, the basal one-fifth strongly thickened and nearly bare, but the remaining portion inconspicuously pubescent on both the sides. Palpi pale yellow, the tip bearing two or three black bristles and the rest furnished with a few yellowish bristle-like hairs; proboscis yellowish brown.

Thorax, reddish brown or pale reddish yellow. Mesonotum distinctly convex, a little longer than broad, slightly widened hindwards, rather densely covered with a tiny black pubescence, on the front  $\frac{2}{3}$  with 3 inconspicuous fine dark longitudinal stripes. Pleurae slightly paler than the notum, with a whitish yellow streak from the humeral callus to the wing-base, the pubescence being as on the notum but sparser and thinner. Scutellum nearly triangle, with the narrowly rounded apex and with the rather distinct straight lateral carinae which become inconspicuous towards the apex, rather flat above. Bristles of mesonotum and scutellum long and black; inner scapular bristles very tiny but distinct; dorso-central bristles shorter than the praescutellar bristles; anterior notopleural, humeral and praesutural bristles nearly the same in length and a little shorter than the dorso-central bristles; posterior notopleural bristles shortest; anterior supra-alar bristles a little longer than the dorso-central bristles, two posterior being longest. Bristles on the pleurae shorter than those on the notum, about the same in length; mesopleural bristles two, the lower one of which is distinctly shorter than the upper. Apical bristles of the scutellum very long,

about twice as long as the scutellum and nearly as long as the hind posterior supra-alar bristle; basal bristles as long as the apicals.

Abdomen short and small, nearly oval with the pointed apex, conspicuously shorter than the thorax or a little longer than broad, yellowish brown, black pubescent; each the 4th-5th (♂) or 6th (♀) tergites with a pair of large black spots, which on the 5th are nearly united together in the middle; each the 2nd-5th (♂) or 6th (♀) tergite bearing a few conspicuous long black bristles near the hind margin, especially on the two apical tergites; basal joint of ovipositor black, about half as wide as long.

Wings rather narrow, blackish brown, with the costal cells, the alulla and the axillary lobe hyaline; stigma black, very little longer than a half the second costal cell; anal cell hyaline, a little shorter than M; r-m oblique, nearer to the tip of  $1M_2$  than to its middle; lower angle of  $1M_2$  more or less pointed. Hyaline spots as follows: Two costal indentations rather narrow, placed at just after the stigma and closed together, reaching below to  $r_{4+5}$ , the outer one being very little extending into  $R_5$ ; three hind indentations large, of which the basal one is broadest and is occupying nearly the basal two-thirds  $IIM_2$ , leaving a very narrow base and connecting with a rather long hyaline streak in  $1M_2$ , the second one at the tip of  $1M_2$  united with an apical hyaline band-like spot in  $1M_2$ ; the hind apical indentation nearly throughout the whole  $IIM_2$ , remaining the very narrow base and apex and connecting with a round hyaline spot in  $R_5$  at just after m-cu; 4 small hyaline spots, a round one being in R straightly below the stigma, a narrow longitudinal one at the base of  $R_1$  just below the second costal cell, a smallest one on the basal portion of m near to the apical margin of M, and remaining one on the base of Cu united with the hind basal indentation.

Legs pale yellow, covered with a black pubescence and many but rather sparse short black bristle-like hairs; coxae with a few black bristles; front femora on the outer margin of the under surface with a row of about 8 very long or short black bristles, and on the outer surface with numerous rather long black bristles; middle tibiae with

a long strong black apical spur; hind femora on the under surface bearing a row of a few rather short black bristles; hind tibiae on the externo-superior margin with a conspicuous row of numerous rather short black bristles.

Length: Body 5 mm (♂ ♀); wings 6 mm (♂ ♀).

Hab. Formosa—Tabani (III), Arisan (V).

Type of male in the National Museum of Hungary, Budapest; of female in the Entomological Museum of Government Research Institute, Taihoku, Formosa.

87. *Acidiella persimilis*, HENDEL.

Ann. Mus. Nat. Hung. VIII., p. 457, pl. VIII, fig. 5, (1915).

This species from the preceding one is easily distinguished by the pattern and venation of the short and broad wings.

♀. Head yellowish, narrower than the thorax, semicircular, as long as half the width. Frons narrow, parallel-sided, proportionally narrower than in *longipennis*, twice as long as broad, or about  $\frac{1}{2}$  as broad as the head, nearly flat, brownish with the orange-yellow eye-margins, very sparsely black pubescent. Face slightly hollowed but at the middle somewhat elevated and before the mouth-edge rather distinctly but finely transversely furrowed and then strongly elevated towards the mouth-edge, narrower than in *longipennis* and along the eye-margins not so strongly furrowed as in the latter. Vertex with a small black ocellar dot; occiput a little broader than in *longipennis*, with 4 very indistinct stripes. Cheeks and hind surface of the head entirely the same to *longipennis*. Bristles on the head black, somewhat stronger than those in *longipennis*; the distance between the upper and middle inferior fronto-orbital bristles distinctly longer than that between the middle and lower bristles (in *longipennis* they stand in the same distance); ocellar bristles not divergent but parallel, a somewhat shorter than the upper superior fronto-orbital bristles; outer pair of vertical bristles in thickness as those in the inner pair; the remaining bristles as those in *longipennis*. Compound eyes nearly semicircular, with the

narrowly rounded upper angle, and with the rather broadly rounded lower angle. Antennae yellow; 2 basal joints as in *longipennis*; third joint narrow, its upper and lower margin being parallel, with the rounded apex, about twice as long as wide; arista pale yellow, a little longer than the antenna, about  $\frac{1}{4}$  basal portion strongly thickened, this part being longer than that in *longipennis*, short pubescent. Proboscis short, yellow, pale pubescent; palpi pale yellow, with a few black bristle-like hairs.

Mesonotum reddish brown, with 4 very inconspicuous irregular dark spots, of which the front pair is placed on the humeral calli and the others at the middle, about  $1\frac{1}{2}$  times as long as wide, a little broadened hindwards, distinctly convex above; pubescence as in *longipennis*. Scutellum as in *longipennis*, but relatively narrow and more flat. Pleurae pale yellowish brown, with a very sparse fine brown pubescence. Mesophragma a little paler than the scutellum. Bristles of the thorax as those in *longipennis*, but proportionally short and thick; basal bristles on the scutellum distinctly longer than the apical pair.

Abdomen nearly as long as the thorax and scutellum together, or as broad as the former, gradually narrowed hindwards, reddish brown, with the short triangular shining black ovipositor; 4th and 5th tergite with a black lateral spot which on the 4th is very indistinct and small, and the spot on the 5th is large and conspicuous; pubescence and bristles as in *longipennis*, but the latter rather fewer.

Wings broad, about twice as long as wide, or nearly as long as the body; r-m parallel with m-cu, nearer to the middle of  $1M_2$  than to the tip; anal cell as long as M. Blackish brown but yellowish towards the base as in *longipennis*, but differs as follows: Apical costal indentation narrower and not extending into  $R_5$ ; round spot in  $R_5$  or R distinctly smaller and that in  $R_5$  not connecting with the apical hind indentation; near the apical margin of  $1M_2$  there are two isolated round spots. Squamulae yellowish, with a very short rather inconspicuous fringe; halteres yellowish brown.

Legs as in *longipennis*, but somewhat paler and the bristles on the lower margin of the front femora only 6, of which only the apical one

is distinctly shorter than the others (in *longipennis* nearly alternately long and short).

Length: Body and wings 5 mm.

Hab. Formosa—Tabani (V).

Only one specimen of female (Type) preserved in the National Museum of Hungary is known to me.

88. *Acidiella arisanica*, sp. nov.

(Fig. 59; Pl. VII, fig. 6)

Allied to *longipennis* HENDEL, but at once distinguished by no hyaline spot in R and no hyaline streak in 1M<sub>s</sub>, as well as by three entirely black apical tergites.

♀. Head yellow, a little narrower than the thorax, semicircular, as long as a half the width. Frons yellow, conspicuously narrower than eye, parallel-sided, flat but very little elevated toward the eye-margins, very sparsely brown pubescent and faintly greyish tomentose; lunula yellowish white, with the upper margin narrowly brown; vertex somewhat brownish, with a small blackish ocellar dot; face whitish tomentose, concave, with the well-reflexed (less reflexed in *longipennis*) upper mouth-edge, and with the very narrow but conspicuous eye-margins; cheeks short, as wide as a half the width of the 3rd antennal joint, with a distinct genal groove; vibrissal edge sparsely bristled; back of the head flat on the upper portion, in where there are four fine brown stripes, of which the inner pair is V-shaped and the outer pair is parallel with each other, on the outside of the latter stripes there is also an another stripe which is transverse and is broader, the lower portion being moderately swollen and sparsely haired. Antennae pale yellow; 3rd joint about  $1\frac{1}{2}$  times as long as wide, with the upper margin very slightly concave and the lower margin strongly convex, its apex being rather narrowly rounded; arista blackish, with the basal thickened portion yellow, longer than the antenna, blackish pubescent; median seta of the second joint very short, black. Palpi pale yellowish, narrow, not reaching the upper mouth-edge, furnished with a few black bristles; proboscis small, yellowish brown.

Thorax entirely shining pale reddish yellow; pleurae paler, with a whitish upper marginal streak; mesonotum covered with numerous black pubescence; scutellum with numerous small brown dots.

Abdomen reddish yellow, with the three apical tergites blackish, black pubescent and bristled; basal joint of ovipositor black, longer than the 5th tergite, or about as long as a half the width.

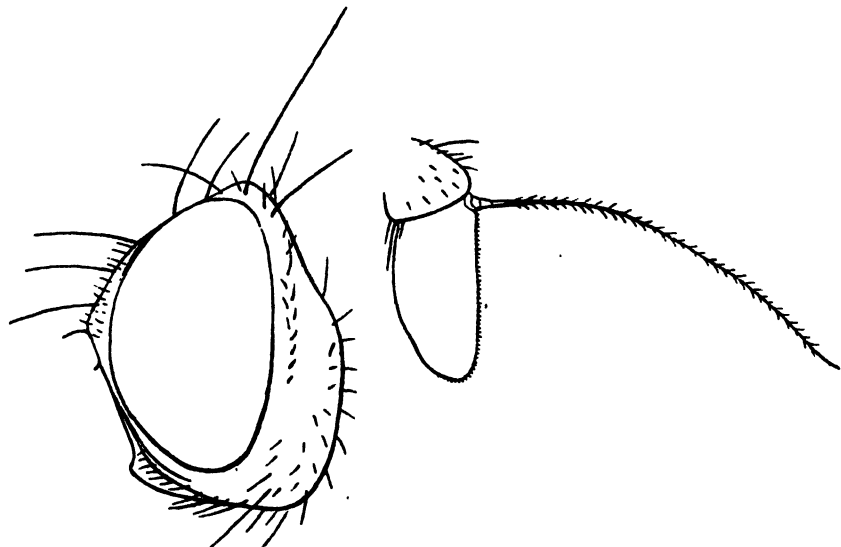


Fig. 59.

*Acidiella arisanica*, sp. nov. ♀, × ca 35. Left antenna, × ca 60.

Wings as those in *longipennis*, but differing as follows: Second costal cell with a round dark brown spot in the middle along the costa;  $R_5$  with a very small isolated hyaline spot near the middle;  $R$  without hyaline spot;  $1M_2$  without hyaline basal streak;  $r-m$  nearer to the middle of  $1M_2$  than to the apex. Halteres pale yellow, with the knob dark brown.

Legs as those in *longipennis*.

Chaetotaxy complete, black, as in *longipennis*, but dorso-central and praescutellar bristles relatively short.

Length: Body 4.3 mm; wings 5 mm.

Only one female, collected in Formosa (Arisan IV), preserved in



the Entomological Museum of Government Research Institute, Taihoku, Formosa.

This species may be a variety of *longipennis* BEZZI.

89. *Acidiella kagoshimensis*, MIYAKE.

Bull. Imp. Agr. Exp. St. Japan, II., 2, p. 150, Pl. 8, fig. 5 (*Acidia*) (1919)

"Prevailing colour of the body fusco-ochreous; all the bristles are black. Head with the occiput and the vertex fusco-ochreous, the frons yellow; ocellar triangle black; eyes purplish ferruginous with greenish black patches; clypeus whitish; genae ochreous; antennae with the third joint bright fulvous; arista shortly pubescent, fusco-testaceous, with the base ochreous; proboscis with the pale ochreous palpi and brownish oval lobes.

Thorax fusco-ochreous, with very long black bristles; halteres ochreous; scutellum with four long bristles.

Legs ochreous.

Wings mostly ochreo-testaceous with hyaline pattern; costal cell and first costal cell rather pale, with two testaceous spots in the latter; pterostigma also pale, with a patch near the transverse portion of the subcosta; from the costa, external to the pterostigma to vein  $M_3+Cu_1$  (fifth longitudinal vein of BEZZI) broadly ochreo-testaceous; two triangular patches at the costa reaching to vein  $R_{4+5}$ ; a very small spot in the radial cell; two small elongate spots in the fifth radial cell; first second-median cell with a long longitudinal streak near vein  $M_3+Cu_1$ ; a short transverse streak near the median transverse vein, across vein  $M_{1+2}$ ; a large triangular patch at the posterior margin in the second second-medial cell; first cubital and anal cells hyaline, with two triangular remnants of ochreo-testaceous area in the first cubital cell on vein  $M_3-Cu_1$ .

Abdomen shining piceous, with rather long testaceous pubescence; three basal segments with some ferruginous shades; the basal joint of the ovipositor tubular, piceous.

Female. Length of body 5.3 mm; length of wing 5 mm.

Described from a female specimen taken by HORII at Kagoshima, on May 13, 1913.

This species is to a certain extent allied to *Acidia rioxaeformis* and *Tephrella decipiens* of BEZZI, but can easily be distinguished by the difference of its wing-markings and by many other bodily characteristics."

The type is not preserved in any places in Japan. I do not know this species; it however may be belong to *Acidiella*.

90. *Acidiella mushaensis*, sp. nov.

(Fig. 60; Pl. VIII, fig. 1)

Allied to *Myiolia caesio* HARRIS or *Acidia cognata* WIEDEMANN, but easily distinguished from the former by the relatively narrow frons and wings, and from the latter species by the blackish abdomen and wings, as well as by the proportionally long stigma and strong sterno-pleural bristle.

Pale reddish yellow, with blackish abdomen. Frons narrower than the eye, parallel-sided, flat, pale ochraceous, very faintly greyish tomentose and very sparsely black pubescent; lunula distinct, yellowish white; vertex not distinctly carinate, with a rather large blackish ocellar dot; vertical calli proportionally long and broad; face whitish, about as long as wide, with the very shallow antennal grooves, the very narrow eye-margins and the distinctly reflexed upper mouth-edge; back of the head pale yellowish brown, with the lateral swellings pale yellow and a rather long but very sparse pubescence; cheeks linear, with a rather indistinct genal groove; vibrissal edge sparsely bristled. Eyes large. Antennae relatively large, orange-yellow; 3rd joint about twice as long as wide, with the upper margin straight and the under margin strongly convex, its apex being broadly rounded; arista longer than the antenna, black with the basal third pale yellow, the black portion being short and black pubescent; median seta of the second joint black, as long as the joint. Palpi yellowish brown, black pubescent; proboscis brown. All the bristles black; ocellar bristles weak,

more or less divergent; superior fronto-orbital bristle only one, a little longer than the ocellar, or the lower inferior fronto-orbital pair; inner postvertical pair as long as the ocellar one; genal bristle as long as the ocellar one.

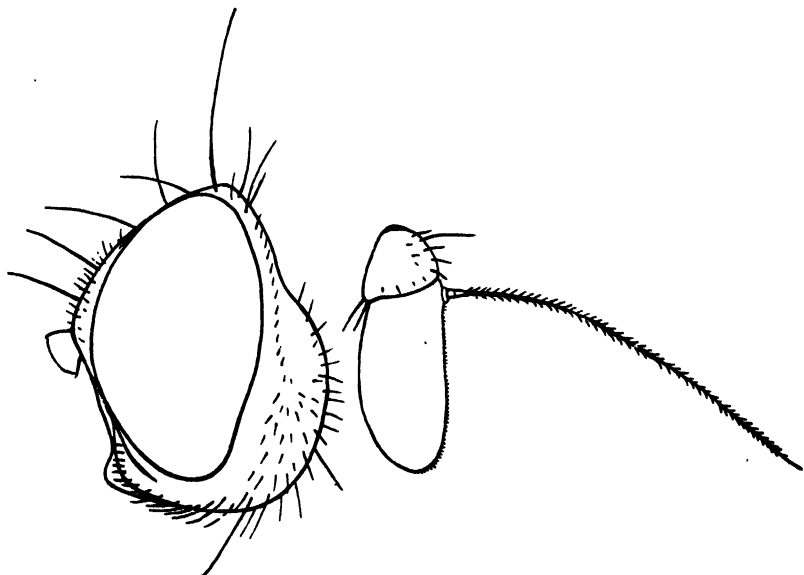


Fig. 60.

*Acidiella mushaensis*, sp. nov. ♀,  $\times$  ca 35. Left antenna,  $\times$  ca 60.

Mesonotum shining reddish yellow, black pubescent, with the humeral calli yellowish white; pleurae pale orange-yellow, with a distinct yellowish white streak which extends from the humeral callus to the pleural suture of mesopleuron along the upper margin; mesophragma shining reddish yellow; scutellum shining reddish yellow, but yellowish toward the tip. All the bristles black; dorso-central bristles in the middle between the anterior and front posterior supra-alar bristles; mesopleural bristles two, the lower one being distinctly shorter than the upper bristle; propleural bristles very weak, two or three.

Abdomen shining dark castaneous, with the first tergite and the front border of the second tergite reddish yellow, black pubescent and bristled; 6th tergite hardly one half as long as the 5th; basal joint of ovipositor strongly shining black, depressed, as long as the 5th tergite.

Wings as *Acidia cognata* in shape and venation, excepting of the stigma, the latter being about  $\frac{2}{3}$  as long as the second costal cell, or as *Myiolia caesio* in colour and pattern. Halteres pale yellow, with the knob blackish; squamulae blackish.

Legs pale yellow, black pubescent and bristled.

Length: Body 5 mm; wings 5 mm.

Only one female (type) from Musha (V), Formosa, preserved in the Entomological Museum of Government Research Institute, Taihoku, Formosa.

#### 91. *Myiolia marumoi*, MIYAKE.

Bull. Imp. Agr. Exp. St. Jap. II., 2, p. 151, Pl. X, fig. 6 (*Acidia*) (1919)

"Allied to *Acidia erythraspis*, BEZZI.

Prevailing colour of the body fuscous black; all the bristles are black.

Head with the vertex and the occiput fusco-fulvous; frons and genae fulvous; ocellar triangle and eyes greenish black; antennae fulvous with the arista black, shortly pubescent; proboscis with the palpi fulvo-ochreous.

Thorax fuscous black with long bristles; scutellum testaceous with four very long bristles.

Legs ochreous, with the tibiae testaceous.

Wings rather long, testaceous black with hyaline patches; costal cell hyaline, the first costal cell with a quadrate hyaline area in the middle; two triangular hyaline patches at the middle of the costal margin, reaching posteriorly to vein  $R_{4+5}$ ; two anteriorly-directed triangular patches at the posterior margin near the apex, one, in the fifth radial cell, rather acute, and the other in the second second-medial cell rather obtuse; a hyaline streak in the first cubital cell, the posterior half of which runs along vein  $Cu_1+1A$ , and the anterior half obliquely crosses the cell, thence reaching anteriorly to  $R_1$ ; anal cell entirely hyaline.

Abdomen shining black, with the ventral side piceous; male genitalia prominent, testaceous with the basal part yellow.

Male. Length of body 4.5 mm; length of wing 4.5 mm.

Described from a single male specimen taken by MARUMO, at Kamikochi (1600 m high), Nagano Prefecture, on July 22, 1915.

Allied to *Acidia erythraspis* BEZZI, but can readily be distinguished by the difference of the wing-markings; it is very interesting that *erythraspis* was also captured at a locality 5000 ft high. I name this species after MARUMO who captured it."

I have no specimens, and in the collections of the late T. MIYAKE there is no type.

92. *Myiolia formosana*, sp. nov.

(Fig. 61; Pl. VIII, fig. 2)

Shining reddish yellow species, of medium-sized; distinguished by a large round black apical patch of wing and by the very narrow frons.

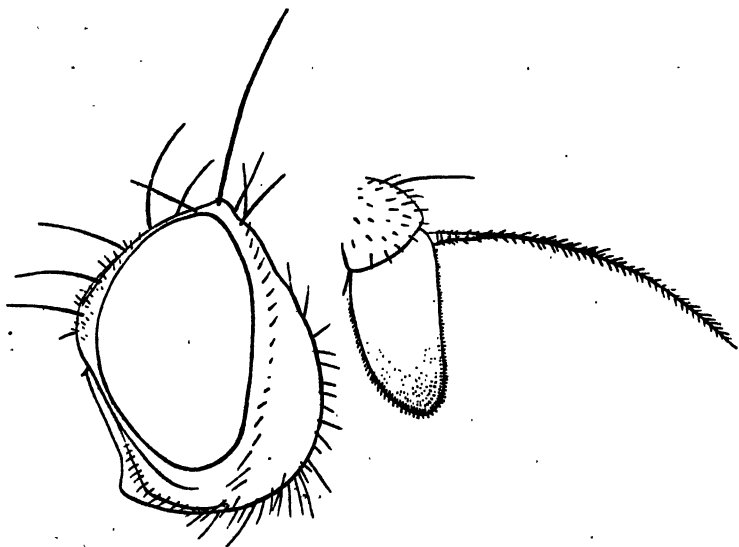


Fig. 61.

*Myiolia formosana*, sp. nov. ♀, × ca 28. Left antenna, × ca 48.

♂ ♀. Frons very slightly concave, with the marginal borders more or less elevated, much narrower than the eye, very slightly broadened forwards, orange-yellow with the lateral margins more or

less greyish tomentose, very sparsely brown pubescent; lunula whitish, with the posterior margin brownish; vertex with a very small blackish ocellar dot, and with the vertical calli very narrow and about as long as the width of the vertex; face pale yellow, with the antennal grooves very shallow and the eye-margins very narrow but conspicuously broadened beneath, the upper mouth-edge not reflexed; back of the head reddish yellow, becoming pale yellow toward the lateral swellings, which are very sparsely black pubescent and are swollen as usual; cheeks about  $\frac{1}{6}$  as high as the eye, yellowish white, with the genal groove conspicuous; vibrissal edge very sparsely short-bristled. Antennae pale orange-yellow; 3rd joint rather large, about twice as long as wide, gradually narrowed towards the rounded apex; arista longer than the antenna, microscopically pubescent, black with the base orange-yellow; second joint sparsely black bristled, with a long median seta which is as long as the joint. Palpi yellowish white, large, gradually narrowed toward the rounded apex, furnished with a very few rather long blackish bristle-like hairs; proboscis pale yellowish. All the bristles black; ocellar bristles prominent, longer than the upper superior fronto-orbital bristle, the latter is distinctly shorter than the other fronto-orbital ones; inner pair of postvertical bristles as long as the upper superior fronto-orbital one; genal bristle rather weak; bristles of occipital row rather strong.

Mesonotum pale yellowish brown, with the humeral calli pale yellow, blackish pubescent; scutellum orange-yellow; pleurae pale yellowish, with an indistinct paler streak on the upper margin of the mesopleuron; mesophragma pale reddish yellow, strongly shining. All the bristles black and long; dorso-central bristles at just behind the line connecting the anterior supra-alar bristles; mesopleural bristles two, the both being strong and the lower one as long as the sternopleural bristle; pteropleural bristle stronger than the sternopleural.

Abdomen shining, orange yellow, black pubescent and bristled, with a pair of very broad black lateral streaks, which are extending from the second or third tergite to the 6th and are becoming very wide at the middle; 6th tergite about  $\frac{2}{3}$  as long as the 5th; basal joint of

ovipositor black, shorter than wide or a little shorter than the two preceding tergites together.

Wings broad, as long as body, blackish brown, with the basal third hyaline. A distinct Y-shaped hyaline spot just after the stigma, its branches being united from each other at  $r_{4+5}$  and its stalk extending below to cu just before the inferior corner of  $1M_1$ . A hyaline subtriangular indentation of posterior wing-margin, placed in  $IIM_2$ , extending above into  $R_5$ . Three hyaline spots as follows: A long oblique one composing of two spots, of which the upper one is placed in  $R_3$  just beneath the stigma and the other in  $R$ ; an oblong spot at the base of  $1M_2$ ; a small and rather inconspicuous one near the tip of Cu. A small brown spot in the second costal cell; a very irregular pale brownish streak along the outer border of both M and anal cell. Stigma a little longer than a half the second costal cell, black;  $1M_2$  rather narrow and long, with its inferior angle distinctly pointed; anal cell nearly as long as M;  $r_{4+5}$  very sparsely bristled on the upper surface, straight, distinctly divergent with m. Halteres pale yellow, with the knob brown; squamulae greyish with the margin blackish brown.

Legs yellow, black and yellow pubescent; median spur long and black; all the bristles black.

Length: Body 6 mm; wings 6 mm.

Hab. Formosa—Tamaru (VIII, IX).

Type in the Entomological Museum of Government Research Institute, Taihoku, Formosa.

### 93. *Myiolia flavonigra*, HENDEL.

LINDNER, Fliegen der Palaearktischen Region, Trypetidae, p. 102, pl. V, fig. 10 (1927).

*Spilographa artemisiae*, MATSUMURA (nec FABR.), Thous. Ins. Jap. Add. II., p. 417, pl. XXIII, fig. 14 (1916).

♂ ♀. Reddish yellow species, of medium-sized. Frons  $1\frac{1}{2}$  times as wide as the eye, or longer than wide, parallel-sided, flat, very sparsely black pubescent; lunula rather large, yellowish white; vertex with a small blackish ocellar dot; vertical calli narrow and long, about half as

long as the width of the vertex, placed far apart from the eye-margin; face yellowish white, broader than long, in the middle conspicuously elevated longitudinally, with the rather deep antennal grooves, the upper mouth-edge being not reflexed; back of the head concave above and swollen below, moderately pubescent; cheeks pale yellowish, about  $\frac{1}{3}$  as high as the eye, with a rather faint genal groove; vibrissal edge moderately black-bristled. Eyes relatively small, oblique, with the anterior and posterior margins moderately convex, and with the upper angle distinctly narrower than the lower angle, the both being rounded. Antennae yellow, inserted at the middle of eyes; 3rd joint about twice as long as wide, gradually narrowed toward the rounded apex; arista longer than the antenna, black with the basal third yellow, very shortly black-pubescent; second joint furnished with a few short black bristle-like hairs especially on the inner side, the median seta being short and black. Palpi very broad, about  $1\frac{1}{2}$  times as long as wide, broadened apically, the apices being rounded and reddish brown, very sparsely black-bristled; proboscis small. All the bristles black; ocellar bristles longer than the fronto-orbital bristles; postvertical bristles a little shorter than the ocellar one; inner vertical pair very strong and long, while the outer pair is also strong but about half as long as the inner one or a little shorter than the ocellar bristle; fronto-orbital bristles 2 : 3, the upper inferior one being very weak; genal bristle weak.

Mesonotum reddish yellow, black pubescent, with the humeral calli pale yellow; scutellum paler than the mesonotum; metanotum black, with a narrow yellowish median stripe; pleurae paler than the mesonotum, with a pale yellow upper streak which extends from the humeral callus to the base of wing along the upper margin of the mesopleuron. All the bristles long and black; propleural bristles conspicuous, 5; mesopleural bristles 2, but the lower one very weak; dorsocentral bristles distinctly behind the line connecting the anterior supra-alar bristles.

Abdomen orange-yellow, sometimes more or less brownish, black pubescent and bristled; 5th tergite of male distinctly shorter than the two preceding tergites together; basal joint of ovipositor wider than long,  $1\frac{1}{2}$  times as long as the 6th tergite, reddish yellow; male genitalia promi-



nent, yellowish brown, with the ventral appendage as long as the dorsal one and black bitipped.

Wings very little longer than the body, hyaline, becoming pale yellowish toward the base; stigma about half as long as the second costal cell; anal cell nearly as long as M;  $r_{1+2}$  sparsely bristled, nearly parallel with m, but at the mouth of R; slightly divergent (in Type-figure convergent); r-m perpendicular, conspicuously after the middle of  $1M_2$ . In wing-pattern somewhat allied to *Trypeta artemisiae*; apical band extending from the tip of  $r_{1+2}$  to below the tip of m, along the wing-margin; second band on m-cu not connected with the apical band, but between  $r_{1+2}$  and m there is a very faint yellowish trace. Four brownish spots as follows: One at the costal margin placed in the middle of the mouth of R; somewhat triangular one in the middle of the anterior margin of Cu, at the base of the latter there is a very small one along the posterior prolongation of the anal cell; darker one at the tip of stigma. In some specimens an another dot is placed at the base of  $r_{1+2}$ . Halteres pale greyish yellow, with the knob brownish.

Legs pale yellow, mostly yellowish pubescent and black bristled.

Length: Body 5-6 mm; wings 5.5-6.1 mm.

Hab. Saghalien (Otomari, VII); China.

Our species very much like to *Trypeta artemisiae* FABR., but at once distinguished by the position of r-m as well as by the very sparsely bristled  $r_{1+2}$ .

Type in the U.S. National Museum, Washington.

### XXXVI. Genus *TRYPETA*, MEIGEN.

Magaz. Illiger, II., p. 277 (1830).

*Spilograpta*, LOEW, Trypetid., p. 39 (1862).

*Phorellia* (nec ROB.-DESV), RONDANI, Prodr., VII., 4, p. 7 & 27 (1870).

Genotype: *Tephritis artemisiae*, FABRICIUS.

Head nearly as broad as the thorax, about a half as long as wide, much broader than high; frons flat, but in profile being seen from above the eye, parallel-sided, 1-2 times as wide as the eye; lunula small;

vertex more or less carinate, with the rather conspicuous vertical calli, which are not reaching the middle of the frons; face broad or narrow, broadened beneath, flat and straight, with the distinct broad but very shallow antennal grooves which are reaching the mouth-edge, with the eye-margins broad, and nearly the same in width throughout; back of the head slightly swollen above and strongly below; cheeks  $\frac{1}{2}$ - $\frac{1}{4}$  as high as the eye, with a rather broad genal groove; vibrissal-edge nearly bare from bristles. Eyes oblong, with the posterior margin less convex and the upper angle less rounded. Antennae inserted at the middle of eyes, not reaching to the upper mouth-edge; 3rd joint about twice as long as wide, with the upper margin straight or more or less concave, its tip being rounded or more or less pointed; arista pubescent. Palpi rather small, nearly straight, more or less bristly; proboscis broad and short.

Mesonotum strongly convex above, a little longer than wide, subquadrate; scutellum moderate in size, strongly swollen.

Abdomen oval, broader or narrower than the thorax, distinctly bristled at the tip; 5th tergite of male much shorter than the two precedings together; 6th of female  $\frac{1}{2}$ - $\frac{2}{3}$  as long as the 5th; ovipositor cylindrical or flat, with the basal joint broader than long, longer than the 6th tergite and more or less bristly at the tip.

Wings rather narrow, with the two very short costal spines and with the straight veins; stigma pointed,  $\frac{1}{2}$ - $\frac{2}{3}$  as long as the second costal cell; anal cell shorter or very little longer than or as long as M, drawn out into a short but narrow pointed lower angle;  $1M_2$  not broad, not obtuse at its lower angle; r-m at the middle of  $1M_2$ , perpendicular; m-cu straight or slightly convex outwards, perpendicular or very slightly oblique;  $r_{4+5}$  parallel to m at its apical part, furnished with numerous or a few bristles nearly throughout, or rarely only at the base.

Legs moderate in size; front femora with a row of very sparse bristles on the externo-inferior side; middle tibiae with a long spur; hind femora with a few weak bristles near the tip; hind tibiae with a row of short bristles on the outer margin.

Chaetotaxy complete: Ocellar bristles short or moderately long;

fronto-orbital 2:3; inner vertical much longer than the outer pair; postvertical not strong, parallel; genal rather weak; bristles of occipital row distinct; prothorax with a row of black or yellowish bristle-like hairs; dorso-central bristles nearer to the suture than to the scutellum, just before or behind the line connecting the anterior supra-alar bristles; notopleural and meso-pleural two; sterno- and pteropleural rather strong; scutellar 4, the apical pair being a little shorter than the basal pair.

Our species are distinguished as follows:

1. Metanotum black, with a yellowish median stripe; r-m in the middle of  $1M_2$ ; anal cell shorter than M.
2. Wings with a blackish apical band..... *trifasciata*, sp. nov.
22. Wings with a large black apical patch..... *hamifera*, LOEW
11. Metanotum entirely yellowish; r-m a little after the middle of  $1M_2$ ; anal cell very little longer than M; wings with a black apical patch, and with (♀) or without (♂) black median band..... *luteonota*, sp. nov.

#### 94. *Trypeta trifasciata*, sp. nov.

(Fig. 62; Pl. IX, fig. 2)

Closely allied to *Trypeta artemisiae* FABR., but distinguished mainly by r-m which is placed in the middle of  $1M_2$  (in *artemisiae* distinctly before the middle), and by three entire wing-bands.

♂ ♀. Shining pale brownish yellow, rather small-sized. Frons in width varying from a little narrower than the eye to conspicuously broader than the eye, almost always very little narrowed forwards, not shining pale yellow to yellowish brown, very sparsely brownish pubescent; lunula almost always yellow; face wider than long, pale yellowish, with the eye-margins yellow; back of the head pale yellowish, on the lower half very sparsely yellowish pubescent; cheeks  $\frac{1}{2}$  as high as the eye, with a very distinct genal groove, the latter extending distinctly behind; the bristles along the vibrissal edge being somewhat recognizable and brownish black. Antennae pale yellow to yellow; 3rd joint  $1\frac{1}{2}$  times as long as wide, its apex being almost always rather broadly rounded (in *artemisiae* very often pointed); arista black and

black pubescent, with the basal fourth orange-yellow and bare; median seta of the second joint black and strong, but not longer than the joint. Palpi pale yellow, in the middle more or less bent, gradually narrowed toward the rounded apex, provided with a very few black bristle-like hairs; proboscis pale reddish yellow to pale yellowish brown. All the bristles black; ocellar bristles almost always longer than the upper superior fronto-orbital bristle; lower superior fronto-orbital bristles stronger than the remaining fronto-orbital ones; genal bristle short;

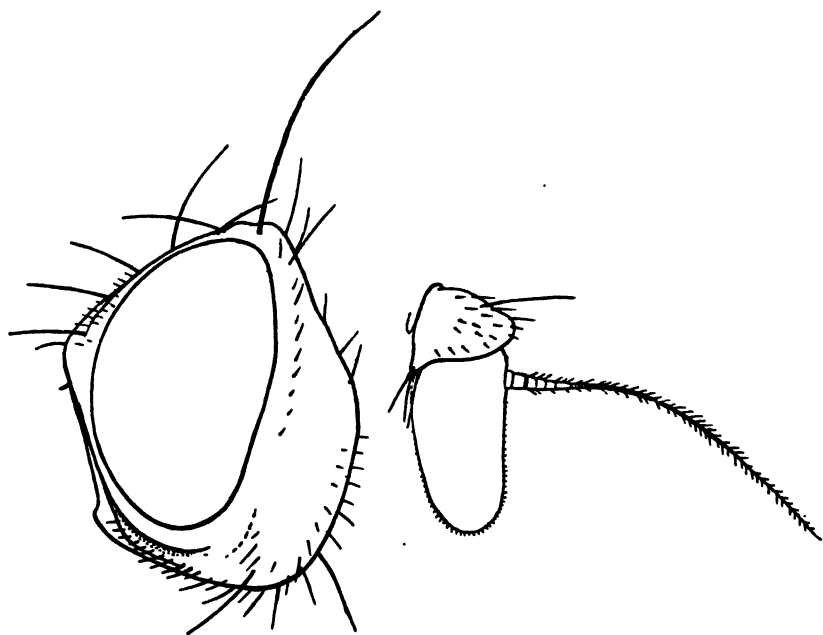


Fig. 62.

*Trypeta trifasciata*, sp. nov. ♀,  $\times$  ca 35. Left antenna,  $\times$  ca 60.

postvertical bristles wide apart from each other, parallel, almost always longer than the ocellar pair.

Mesonotum rather small, shining pale brownish yellow, very sparsely brown pubescent, with the humeral calli yellowish white, at just behind the wing-bases there is a distinct but small black dot; scutellum pale yellowish; pleurae pale yellowish, with a yellowish white so-called notopleural stripe; metanotum shining black, with a narrow yellowish

median stripe. All the bristles black, excepting the propleural bristles yellowish; dorso-central bristles at just behind the line connecting the anterior supra-alar bristles; two mesopleural bristles distinct, but the lower one being very weak; humeral and all the pleural bristles distinctly shorter than the remainings.

Abdomen almost always broader than the thorax, shining, pale yellow to pale reddish yellow, black pubescent and bristled; 6th tergite of female distinctly shorter than the preceding one; basal joint of ovipositor pale yellow to pale reddish yellow, wider than long or nearly as long as the 5th tergite; male genitalia pale yellowish, rather conspicuous, the ventral appendage being very long and about twice as long as the dorsal one.

Wings hyaline, more or less yellowish tinged partly, with three dark brown bands, distinctly longer than body; stigma about as long as half the second costal cell or a little longer than half the latter; r-m almost always in the middle of  $1M_2$ , or rarely a little after, and never before the tip of the stigma (in *artemisiae* always distinctly before the tip of the stigma, or the middle of  $1M_2$ );  $r_{4+5}$  distinctly bristled from the base to behind r-m. Three bands as follows: First band, from the apical half of the stigma to the middle of the mouth of Cu, is very little S-like curved, and is rarely faint excepting of in stigma and on r-m; second band, from the middle of the mouth of R to the apex of cu, along m-cu, is nearly straight, and is very little broadened below, becoming very rarely paler between  $r_{2+3}$  and m; 3rd or apical band, from the tip of R to the tip of  $1M_2$ , along the wing-margin, is broader than the others but the both ends narrowed, its inner margin being distinctly concave; very rarely with a hyaline spot in R. Three blackish dots are found near the wing-base; the upper dot at the base of  $r_{4+5}$  conspicuously black; the lower one along the upper margin of posterior prolongation of the anal cell brownish; the remaining one very faint, placed on the apical margin of M. Halteres pale yellowish, with the relatively small knob greyish black; squamulae pale yellowish.

Legs pale yellow, blackish and yellowish pubescent, the bristles being black; middle spur strong.

Length: Body 4 (♂)–5 (♀) mm.; wings 5–5.2 mm.

Hab. Japan—Hakubasan (Nagano-ken, VII).

Saghalien—Kaiba-to (VII).

Types in the Entomological Museum of Government Research Institute, Taihoku, Formosa.

95. *Trypeta hamitera*, LOEW.

Linn. Entom. I., p. 496, Pl. III, fig. 12 (1846).

♂ ♀. Pale reddish yellow, rather small-sized. Frons a little broader than the eye, parallel-sided, pale orange-yellow but the anterior lateral borders more or less greyish, very sparsely brown-pubescent; lunula greyish; vertex with a small black ocellar dot, with the vertical calli about as long as two-thirds the width of the vertex and distinctly oblique; face broad, whitish yellow, excepting the eye-margins pale orange-yellow; back of the head darker above and paler below, somewhat brownish pubescent; cheeks about  $\frac{1}{2}$  as high as the eye; genal groove very conspicuous; vibrissal edge provided with a very few short bristle-like hairs. Antennae yellowish; 3rd joint nearly twice as long as wide, its apex being rounded, with the under side strongly convex; arista very long, black and black pubescent, but the basal fourth pale yellow; median seta of the second joint about as long as the joint, black. Palpi pale yellow, gradually narrowed towards the rounded apex, but in the male rarely more or less pointed, the apex being provided with a few brown bristles; proboscis pale dirty yellowish. All the bristles black; ocellar bristles almost always weak, distinctly shorter than all the fronto-orbital bristles; postvertical bristles stronger than the ocellar bristles, wide apart from each other.

Mesonotum pale yellow to reddish yellow, on its anterior half there are three very indistinct blackish longitudinal stripes, black pubescent, with the humeral calli paler coloured; pleurae paler than the notum, with an indistinct whitish so-called notopleural streak; scutellum strongly shining, pale yellowish; metanotum shining black, with a narrow yellowish median stripe. All the bristles black; pleural bristles shorter

than the notal bristles, especially the lower mesopleural bristle being very weak and short; dorso-central bristles nearly on the line connecting the anterior supra-alar bristles.

Abdomen shorter ( $\delta$ ) or longer ( $\varphi$ ) than the thorax, pale ochraceous, black pubescent and bristles; 6th tergites of female  $\frac{2}{3}$  as long as the 5th; basal joint of ovipositor strongly shining, dark castaneous to black, broader than long or very little longer than the 6th tergite; male genitalia yellowish, with the ventral appendage very long and strongly depressed and black tipped, and with the dorsal one cylindrical and about  $\frac{2}{3}$  as long as the ventral one.

Wings very little longer than the body, hyaline, more or less yellowish towards the base. Wing-pattern as follows: The apical patch rounded, its inner margin being almost always convex or rather straight but never concave, extending from the tip of R to the tip of IIM<sub>2</sub>; median band nearly straight, from the middle of the mouth of R to the apex of cu, over m-cu, almost always entire, but in the male almost always interrupted between r<sub>2+3</sub> and m, or in the female rarely so; first band broader than the median one, beginning the stigma and extending below, over r-m, but never reaching the posterior wing-margin, while it in the European specimens often extends to there; three black dots as in the preceding species. Stigma about  $\frac{2}{3}$  as long as the second costal cell, entirely blackish; r<sub>4+5</sub> sparsely bristled towards the base, parallel to m; r-m in the middle of 1M<sub>2</sub>, very rarely very little before or after the middle of the latter; m-cu almost always very little convex.

Legs pale yellow, black pubescent; spur of median tibiae long and black, about half as long as the metatarsus.

Length: Body 4 ( $\delta$ )-5 ( $\varphi$ ) mm; wings 5.2 mm.

Hab. Saghalien—Otomari (VII), Tonnai (VIII).

Europe.

96. *Trypeta luteonota*, sp. nov.

(Fig. 63; Pl. IX, fig. 3)

Somewhat allied to *hamifera* LOEW and *joë* MEIGEN, but easily distinguished from the both by uniformly yellowish metanotum, by a con-

spicuous black spot at the apex of the anal cell, and by a very large black spot at the posterior apex of  $1M_2$ .

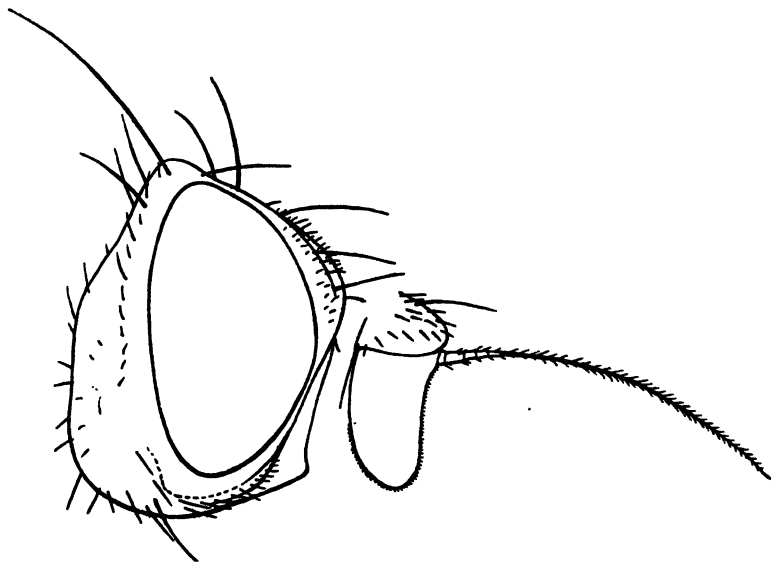


Fig. 63.

*Trypeta luteonota*, sp. nov. ♀,  $\times$  ca 28. Left antenna,  $\times$  ca 48.

♂ ♀. Pale reddish yellow or pale brownish yellow species, of medium-sized, with the glass-hayline largely black tipped wings. Frons as wide as the eye (in the female somewhat broader), nearly parallel-sided, orange-yellow, more or less becoming paler towards the sides, very sparsely blackish pubescent; lunula more or less whitish; vertex with a small black ocellar dot; vertical calli strongly shining, longer than a half the width of the vertex; face broad and somewhat whitish, its eye-margins being relatively narrow and orange-yellow; back of the head pale yellow, more or less becoming much paler below, provided a few blackish pubescence; cheeks about  $\frac{1}{2}$  as high as the eye, with the genal groove less distinct, and with the vibrissal-edge furnished with rather many black bristle-like hairs. Eyes proportionally large, the upper and lower angles being rather narrowly rounded. Antennae pale yellow; 3rd joint twice as long as wide, moderately narrowed toward its rounded apex; arista conspicuously longer than the antenna, black with the base



pale yellow, black pubescent; median seta of the second joint as long as the joint. Palpi pale yellowish, proportionally large, very slightly curved, the apex being somewhat narrowed and furnished with a few blackish bristle-like hairs; proboscis pale yellowish. All the bristles black; ocellar bristles weak, conspicuously shorter than the fronto-orbital ones; postvertical bristles wide apart from each other, somewhat stronger than the ocellar pair but not longer.

Mesonotum pale brownish yellow (in the male with a large median blackish brown spot), black pubescent, with the humeral calli pale yellowish; pleurae uniformly pale yellowish; scutellum and metanotum paler than the mesonotum. All the bristles black, excepting of the hair-like bristles of prothorax yellowish; dorso-central bristles on the line connecting the anterior supra-alar bristles; pleural bristles relatively long, of which the mesopleural bristles are two and their lower one is very short.

Abdomen in both sexes about as long as the thorax, pale reddish yellow, black pubescent and bristled; 6th tergite of female about half as long as the 5th; basal joint of ovipositor shining black, about as long as wide or a little shorter than the two preceding tergites together; male genitalia pale yellowish brown, prominent, the ventral appendage being short.

Wings longer than the body, glass-hyaline, more or less yellowish at the base; stigma about  $\frac{2}{3}$  as long as the second costal cell, entirely black; anal cell very little longer than M;  $r_{4+5}$  bristly only at the basal portion; r-m at just after the middle of  $1M_2$ , very slightly concave; m-cu distinctly convex. Wing-pattern black or blackish brown, as follows: ♀. Two bands in the middle, the first one on r-m is extending from the stigma to the middle of the mouth of Cu and becoming conspicuously narrow toward the posterior wing-margin, to where it is not reaching; the second one is broader than the former and is consisting of two spots, the costal one of which is placed in the middle of the mouth of R and the posterior one at the posterior corner of  $1M_2$ , these two being connected with each other between  $r_{4+5}$  and m. The apical patch is large and rounded, its inner margin being notched twice on

$r_{4+5}$  and  $m$ . The anal spot is conspicuously smaller than the apical one and is oval, placing at the tip of posterior prolongation of the anal cell. ♂. Two bands are not entire, the first one being very narrow and interrupted in  $R_1$ ; the second one presenting by two spots, the costal spot of the latter is very small and is not extending below to  $R_3$ , and the posterior spot is large and quadrate, being connected with the first band by a narrow streak on  $cu$ . The apical spot smaller than that in the female, not extending above to the apex of  $R$ ; anal spot as that in the female.

Halteres dirty yellow; squamulae yellowish.

Legs pale yellowish, black pubescent and bristled; apical spur of the median tibiae long and black.

Length: Body 4.5 (♂)–5.5 (♀) mm; wings 4.8 (♂)–5.8 (♀) mm.

Hab. Formosa—Shinchiku (VII); Funkiko (IV).

Types in the Entomological Museum of Government Research Institute, Taihoku, Formosa.

### XXXVII. Genus **PARAMYIOLIA** nov.

The present genus is near to the genera *Myiolia* and *Vidalia*, but easily distinguished from the former by the lateral elevation of frons, and from the latter by the well-developed ocellar bristles, as well as by dorsocentral bristles which are placed very near to praescutellar bristles, the latter being rather wide apart from each other.

Head broader than high, about as wide as the thorax, moderate in length; frons very broad, but not wider than long, concave, with the conspicuously elevated lateral margins which become gradually higher towards the front; lunula distinct; vertex carinate, with the well-elevated vertical calli which are less than a half the length of frons; face wider than long, more or less longitudinally carinate, with the very distinct antennal grooves, when seen from side straight and nearly perpendicular; back of the head rather slightly swollen, but the upper area distinctly hollowed; cheeks rather narrow, about  $\frac{1}{3}$  as high as the eye, with a distinct but narrow genal groove; vibrissal edge very indistinctly bristly. Eyes moderate in size, with the upper and lower angles equally

rounded, its posterior margin being less convex. Antennae inserted at the middle of eyes, not reaching to the upper mouth-edge; 3rd joint about twice as long as wide, obtusely rounded; arista very shortly pubescent. Palpi moderate in length, slightly curved upwards, rounded at the tip, slightly bristled; proboscis very small.

Mesonotum a little longer than wide, conspicuously convex, broadest behind the middle; scutellum moderate in size, subtriangular, moderately convex above.

Abdomen short, broader than the thorax, broadest before the middle, about as long as the thorax, bristly at the tip; 5th tergite of male a little longer than the 4th.

Wings broad, without the distinct marginal spine; stigma about half as long as the second costal cell, pointed; anal cell distinctly shorter than the 2nd basal cell, drawn out into a short pointed lower angle; 1M<sub>2</sub> more or less pointed posteriorly; r<sub>2+3</sub> straight; r<sub>4+5</sub> rather thickly bristly on the basal half, parallel with m; r-m distinctly after the middle of 1M<sub>2</sub>, perpendicular; m-cu straight, parallel with r-m.

Legs rather stout; front femora distinctly bristly; middle tibiae with a single very strong spur; hind tibiae with a row of rather long bristle; hind femora with 2 or 3 long bristles near the tip.

Chaetotaxy complete; ocellar bristles divergent, moderate in length; fronto-orbital bristles 2: 4, the two lower inferior bristles being very strong and long spine-like, and the superior pairs rather weak; inner vertical bristles much longer than the outer pair; postvertical moderate in length, parallel; bristles of occipital row rather long, sparse; dorso-central bristles very near to the praescutellar pair; notopleural 2; prothorax with a row of bristle-like yellowish hairs; mesopleural 2; sterno- and pteroplural strong; scutellar 4, very long, their basal pair being much longer than the apical pair.

This new genus may be a subgenus of *Vidalia*.

Only one species from Japan.

97. *Paramyiolia takeuchii*, sp. nov.

(Fig. 64; Pl. VIII, fig. 3)

♂. Yellowish species of small-sized, with wings blackish, the latter having hyaline indentations and spots. Frons pale yellowish, but becoming orange-yellow forwards, at the base of the bristles distinctly yellow; lunula whitish, with the posterior margin reddish yellow; vertex pale yellowish, with a rather large but ill-defined dark ocellar spot; face blackish brown, with the eye-margins yellowish; back of the head pale yellow, furnished with a very few black hairs; cheeks light yellowish, with the bristle-like hairs of vibrissal edge being very fine and blackish. Antennae brown; arista blackish brown, with the basal  $\frac{1}{3}$  yellowish. Palpi yellow, yellowish bristled; proboscis dark yellow. All the bristles black, but the genal bristle brown; two pairs of the upper inferior fronto-orbital bristles and the superior ones nearly the same in length; ocellar bristles divergent, a little shorter than the upper superior fronto-orbital bristle.

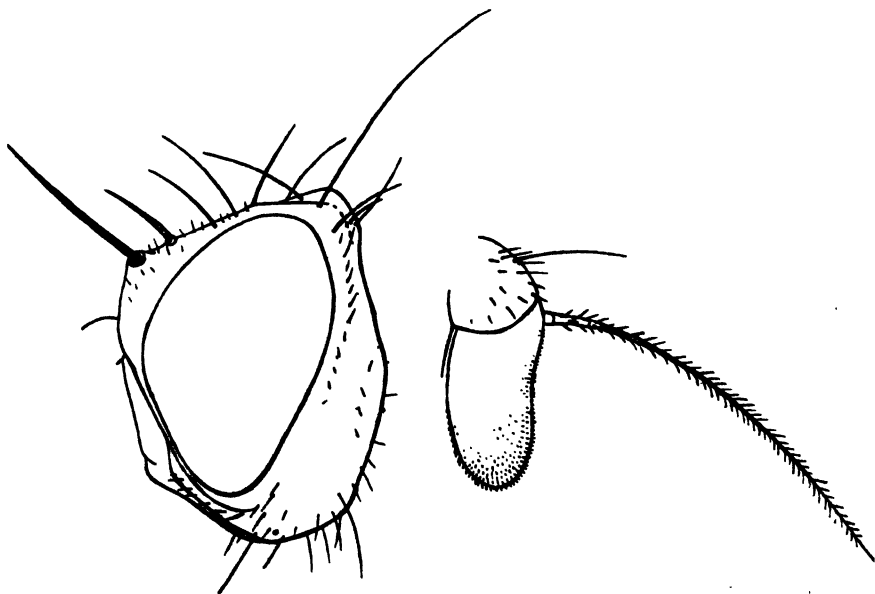


Fig. 64.

*Paramyiolia takeuchii*, sp. nov. ♂,  $\times$  ca 35. Left antenna,  $\times$  ca 60

Mesonotum moderately longer than wide, pale yellow or pale brownish yellow, black pubescent, when seen from behind on the praesutural area there may be seen one pair of rather broad paler median stripes; humeral calli somewhat whitish; pleurae paler than the notum, with an indistinct much paler so-called notopleural stripe; scutellum pale yellow; metanotum entirely black, but the mesophragma pale yellow. All the bristle black; humeral and lower mesopleural bristles conspicuously shorter than the others; upper posterior supra-alar and basal scutellar bristles distinctly longer than the remainings; apical scutellar bristles narrowly apart from each other.

Abdomen yellow, with the two apical tergites black, black pubescent and bristled; 3rd tergite with a broadly interrupted black band; 4th tergite with a very narrow yellowish median posterior band; genitalia shining black, with the appendages yellowish, the ventral appendage being rather small and blackish pointed.

Wings blackish brown, with hyaline indentations and spots as shown in the figure, the pattern being somewhat irregular in specimens and also in right and left wings. The variation occurs mainly in  $R$ ,  $R_1$  and second costal cell: At the base of  $R_1$  there are rarely presenting two spots; two indentations in the second costal cell sometimes not connected with each other behind; between two indentations in  $R$  there is often a small rounded hyaline spot. Halteres and squamulae whitish, but the latter being brownish margined.

Legs very pale yellow, mainly black pubescent, the bristle-like hairs being always black.

Length: Body 4-5 mm; wings 4-5 mm.

Hab. Japan—Daisen (VII); Gifu (VII).

Type in the Entomological Museum of Government Research Institute, Taihoku, Formosa.

### XXXVIII. Genus *ANASTREPHOIDES*, HENDEL.

LINDNER, Fl. Palaearkt. Region, Trypetidae, p. 105 (1927).

Genotype—*Anastrephoides gerckei*, HENDEL.

This is also very near to the genus *Myiolia*, distinguishing by the

very long cylindrical ovipositor, by the high cheeks and by the lateral swellings of the head.

Head about as high as broad, or about as wide as the thorax, or about half as long as wide; frons very broad, much broader than the eye, about as long as wide, parallel-sided; lunula conspicuous, semi-circular; vertex straightly carinate, with a rather large ocellar triangle; face moderately long, with the conspicuous antennal grooves and the very broad eye-margins, when seen from side straight and nearly perpendicular; back of the head strongly swollen behind; cheeks very broad, about half as high as the eye, with a triangular shallow genal groove; vibrissal-edge distinctly bristled. Eyes small, elliptical, with the posterior margin less convex, and with the upper angle broader than the lower one. Antennae inserted at just below the middle of eyes, about half as long as the face; 3rd joint about twice as long as wide, narrowly rounded apically; arista shortly pubescent. Palpi rather broad and short, more or less curved upwards, very sparsely bristled; proboscis rather broad.

Mesonotum about  $1\frac{1}{2}$  times as long as broad, convex above; scutellum rather small, strongly convex above, subtriangular.

Abdomen shorter than the thorax and about as wide as the latter; 6th tergite of female about  $\frac{2}{3}$  as long as the 5th, or about as long as the 3rd; basal joint of ovipositor very long, about as long as the body, its basal half being conical and its apical half narrowly cylindrical, without any bristles.

Wings rather broad, with the two distinct but short marginal spines and with the straight veins excepting the apical section of m which is slightly but distinctly curved forwards; stigma rather small and pointed about half as long as the second costal cell; anal cell shorter than the 2nd basal cell, drawn out into a short pointed lower angle;  $r_{4+5}$  distinctly but very sparsely bristled on its basal half, its tip very slightly divergent with m; r-m after the middle of  $1M_2$ , but very far apart from m-cu, the latter being very slightly oblique; upper angle of  $1M_2$  more or less pointed and the lower angle nearly right angle.

Legs moderate in length; front femora distinctly bristled; middle

tibiae with a single very long spur; hind tibiae with a row of very few short bristles; hind femora with two or three bristles near the tip.

Chaetotaxy complete; ocellar bristles strong; fronto-orbital 2: 3, the superior pairs being stronger; inner vertical longer than the outer; postvertical rather strong; bristles of occipital row long but sparse; prothorax with two or three distinct but short bristles, one of which is very conspicuous; dorso-central bristles distinctly behind the line connecting the anterior supra-alar bristles; notopleural 2; mesopleural 2; sterno- and pteropleural strong; scutellar 4.

98. *Anastrephoides matsumurai*, sp. nov.

(Fig. 65; Pl. VIII, fig. 4)

Yellow species of medium-sized. Allied to *gercke*i HENDEL and *extranea* DE MEIJERE, but distinguished from the former by a distinct

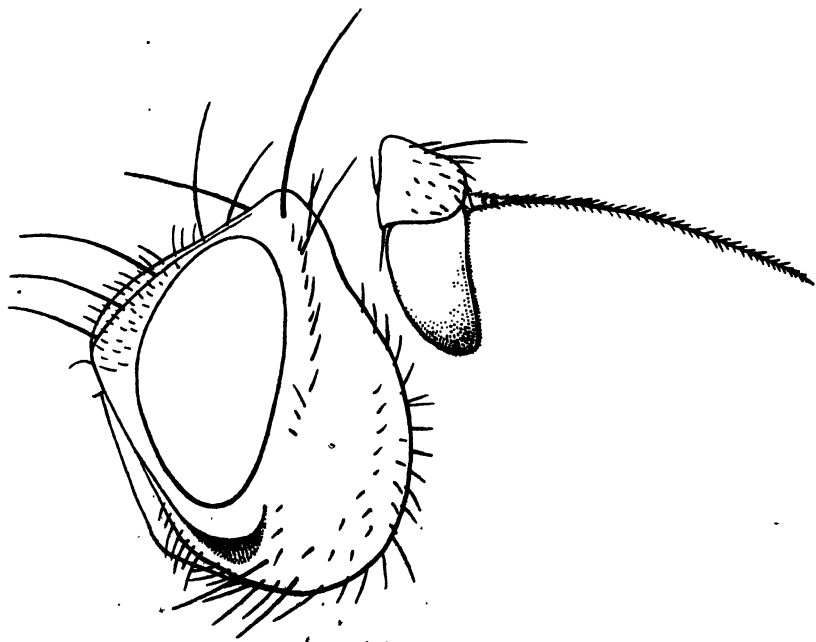


Fig. 65.

*Anastrephoides matsumurai*, sp. nov. ♀, × ca 28. Left antenna, × ca 48.

transverse-oblong hyaline spot in R, by a large black apical spot of scutellum, by an ill-defined black lateral stripe of metanotum, and by relatively narrow frons; from the latter by relatively short stigma and anal cell, as well as by wing pattern.

♂ ♀. Frons orange-yellow, about  $1\frac{1}{2}$  times as wide as the eye, sparsely but distinctly black pubescent in the middle and along the eye-margins; lunula whitish; vertex with a small dark castaneous ocellar dot, with the vertical calli rather narrow and shining; face pale brownish, with the eye-margins orange-yellow; back of the head light yellow, distinctly but sparsely black-pubescent, the lateral swellings being much paler; cheeks orange-yellow; bristle-like hairs of the vibrissal edge rather long and not extending behind above. Antennae orange-yellow; 3rd joint concave above; arista black and black pubescent, with the extreme base yellowish; median seta of the second joint black and strong, but not longer than the joint. Palpi orange-yellow, furnished with a few weak blackish bristles; proboscis dark coloured.

Mesonotum somewhat brownish, black pubescent, with the humeral calli whitish yellow; pleurae pale yellow, the upper margin being distinctly paler and the mesopleuron distinctly pubescent; scutellum pale yellow, with an ill-defined blackish apical spot; metanotum strongly shining pale reddish yellow, with the lateral borders black.

Abdomen pale orange-yellow, shining, black pubescent; the posterior margin of the 4th-6th tergite furnished with some long black pubescence; basal joint of ovipositor pale reddish yellow; male genitalia pale reddish yellow, with the ventral appendage black tipped.

Wings pale brownish yellow, with hyaline markings as shown in the figure, those markings being more or less brown-margined.

Legs slender, light yellow, mainly black pubescent and black bristly.

All the bristles black; acrostical rather strong; two mesopleurals nearly the same in length; genal bristles two, strong.

Length: Body (with ovipositor) 10 mm; wings 6 mm.



Hab. Japan – Hokkaido (Sapporo, VII, collected by Prof. S. MATSUMURA); Saghalien (Otomari VI).

Type in the Entomological Museum of Government Research Institute, Taihoku, Formosa.

XXXIX. Genus **MAGNIMYIOLIA**, nov.

This is allied to the genus *Myiolia*, but easily distinguished from that by the strongly elevated frons, by the long face, and by the long conical ovipositor.

Genotype *Magnimyiolia jozana*, sp. nov.

Head narrower than the thorax, or higher than broad, or longer than half the width; frons a little broader (♀) or narrower (♂) than the eye, very slightly widened forwards, conspicuously swollen above, especially before the lunula, the latter being prominent and semicircular; vertex not carinate, with the long vertical calli; face longer than the frons, or conspicuously longer than wide, distinctly convex, with the rather narrow antennal grooves, with the very narrow eye-margins and with the upper mouth-edge rather deflexed, in profile slightly convex in the middle and slightly oblique behind; back of the head moderately swollen, but the upper area more or less flattened; cheeks about  $\frac{1}{2}$  as high as the eye, with a narrow indistinct genal groove, the vibrissal-edge being very indistinctly bristly. Eyes long, about  $2\frac{1}{2}$  times as long as wide, with the posterior margin slightly convex, with the upper angle broadly rounded, and with the lower angle more or less pointed. Antennae inserted distinctly above the middle of eyes, very short, not reaching to the middle of the face; 3rd joint about  $1\frac{1}{2}$  times as long as the 2nd or about twice as long as wide, gradually narrowed towards its narrowly rounded tip; arista pubescent. Palpi narrow, rather long, nearly straight, distinctly bristly; proboscis rather big.

Mesonotum about  $1\frac{1}{2}$  times as long as wide, slightly narrowed behind, moderately convex above; scutellum moderate in size, subtriangular, moderately swollen above.

Abdomen (without ovipositor) shorter than the thorax, oval, bristly at the posterior margin of each the 3 posterior tergites; 5th tergite of

male about as long as the two precedings together; genitalia rather prominent; 6th tergite of female as long as the 5th; basal joint of ovipositor as long as the 5 preceding tergites together, long-conical, pubescent, and on its apex bristly.

Wings rather narrow, with the two very indistinct marginal spines; stigma narrow-sharply pointed, about  $\frac{2}{3}$  as long as the second costal cell; anal cell as long as the 2nd basal cell, drawn out into a moderately long and narrow pointed lower angle;  $r_{2+3}$  and  $r_{4+5}$  nearly straight, the latter distinctly but rather sparsely bristly on the basal  $\frac{2}{3}$ ; m moderately curved, but the apical section parallel to  $r_{4+5}$ ; r-m at just after the middle of  $1M_2$ , slightly oblique distally, its posterior end being near to the wing-tip; m-cu about twice as long as r-m, slightly S-like waved, distinctly oblique, but each the upper and lower angles of  $1M_2$  is nearly right-angle.

Legs rather long; front femora with a row of very strong bristles on the lower margin, but bristles on the outer side very weak; middle tibiae with a very strong apical spur; hind tibiae with a row of rather few short bristles; hind femora with a few bristles near the tip.

Chaetotaxy complete; ocellar bristles weak, parallel; fronto-orbital 2:3, about equal in length; vertical bristles very strong, the inner pair being a little longer than the outer pair; postvertical rather strong, parallel; genal strong, often two; bristles of occipital row short and sparse; prothorax with some bristle-like hairs; dorso-central nearer to the scutellum than to the suture; notopleural 2; mesopleural 2; sterno- and pteropleural strong; scutellar 4, the basal pair being a little longer than the apical pair.

Only one species from Japan.

99. *Magnimyiolia jozana*, sp. nov.

(Fig. 66; Pl. VIII, fig. 5)

Pale yellow to pale reddish yellow species of large-sized; somewhat allied to *Pseudacidia takeuchii* SHIRAKI, but at once distinguished by the morphological characters and by the wing-pattern.

♂ ♀. Frons orange-yellow (♂) to pale reddish-yellow (♀), becoming somewhat paler toward the anterior margin, furnished with a very few blackish pubescence; lunula whitish; face whitish (♂) or greyish (♀), with the eye-margins pale orange-yellow; vertex with a small blackish brown ocellar dot; back of the head orange-yellow, becoming paler below, furnished with a few yellowish (♂) or blackish (♀) pubescence; cheeks orange-yellow, somewhat paler than the frons; the bristle-like hairs of vibrissal edge very few, yellowish (♂) or blackish (♀). Antennae pale yellow (♂) to pale brownish yellow (♀); 3rd joint with the upper margin straight, of the female darker than two basal joints; arista black and black pubescent, with the base yellowish;

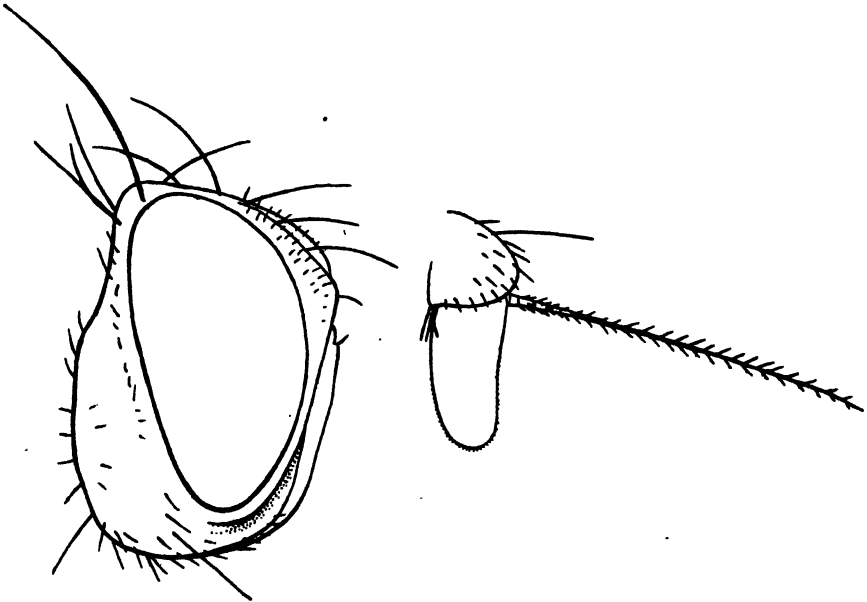


Fig. 66.

*Magnimyolia jozana*, sp. nov. ♀, × ca 20. Left antenna, × ca 40.

median seta of the second joint distinctly shorter than the joint, black. Palpi yellowish white (♂) to pale brownish yellow (♀), furnished with brown (♂) to black (♀) bristle-like hairs; proboscis yellow (♂) to dirty yellow (♀).

Mesonotum very pale or pale reddish yellow, black pubescent, with the humeral calli light yellowish; pleurae light yellowish; scutellum, mesophragma and metanotum somewhat paler than the mesonotum, bare from black pubescence.

Abdomen reddish yellow, the pubescence and bristles being black; basal joint of ovipositor strongly shining reddish yellow, covered with a short rather dense brownish pubescence, with the second joint very narrow and long; genitalia pale reddish yellow, the ventral appendage being long and pale yellow.

Wings hyaline, but more or less yellowish tinged, excepting the extreme base, the costal cell and the posterior border, with three blackish bands and two rather indistinct smoked spots. The first band, placed in the middle, is very slightly convex, extending from the stigma to before the apex of Cu over r-m; second band, on m-cu, is straight and extends from the costa to the tip of Cu, the band being rarely connected irregularly with the first band near the posterior wing margin; 3rd band, along the costa, is broadest and extends from the anterior tip of the second band to the apex of IIM<sub>2</sub>, in the base of this band there is rarely a small hyaline dot. In R there is a narrow transverse dark spot in the middle of the hyaline space between the first and second bands, often extending over r<sub>2+3</sub>; one another very ill-defined spot is placed on the upper margin of the lower angle of anal cell. Halteres and squamulae light yellowish, the former having somewhat darkened knob.

Legs pale yellowish, yellowish pubescent and black bristled.

All the bristles black and strong; scapular bristles rather prominent, the outer pair longer than the acrostichal one.

Length: Body 7 (♂)-12 (♀ with ovipositor) mm; wings 8-8.5 mm.

Hab: Japan—Hokkaido (Jozankei VII).

Types in the Entomological Museum of Government Research Institute, Taihoku, Formosa.

XL. Genus **PHANTASMIELLA**. HENDEL.

Wien, Ent. Zeit. XXXIII., p. 87, (1914); Ann. Mus. Nat. Hung. XIII., p. 434 (1915).

This genus is easily distinguished from any others by the very narrow and very long body, by one conspicuously thick laterally depressed lower superior fronto-orbital bristle; by a row of bristles along the lower margin of meso- and sternopleurae, by 3 spurs of middle tibiae, and by no cross-band of wings nor reticulate-pattern.

Genotype:—*Phantasmiella cylindrica*, HENDEL.

Head somewhat depressed, about 'as long as wide, with the proportionally large (but far apart) eyes and the rather long pendant antennae.

Mesonotum very long and narrow, about  $2\frac{1}{2}$  times as long as wide, or about twice as long as the pleural height, with the complete transverse suture; scutellum rather transverse, with 4 bristles; the space between the front and middle coxae very long, more than half the length of thorax, just before the middle coxae furnished by a row of long bristles.

Abdomen about twice as long as the thorax, or many times as long as wide, nearly cylindrical but rather laterally depressed; 1st and 2nd tergites fused each other on the median broad line; apical tergite with 6 very strong bristles along the posterior margin.

Wings relatively narrow and short, with the straight more or less divergent veins, of which c, sc and  $r_{4+5}$  distinctly bristled throughout their whole length; r—m distinctly before the middle of 1M; all the cross-veins not oblique; anal cell with the shortly pointed lower angle.

Legs narrow and long, but the anterior pair considerably shortened, especially the femora and tibiae.

Chaetotaxy: Vertical bristles, 2, strong; postvertical rather weak, but rather long and slightly divergent; occipital row rather distinct, composed of a few black pointed bristles; fronto-orbital 2:2, of which the inferior bristles are standing just above the lateral and of lunula, and the superior pairs are at the middle of frons, the lower pair being

very thick and directing upwards, while the upper pair is fine and is directing below; 3 pairs of scapular and 2 propleurals distinct; 1 humeral, 2 notopleurals, 3 (1 anterior) supra-alars, 1 pair of dorso-central, 1 pair of basal scutellar and 1 pair of praescutellar very long and strong, the latter being weaker than others; dorso-central bristles on just before the line connecting the posterior notopleural bristles or very far before the line connecting the anterior supra-alar bristles; apical pair of scutellar bristles very weak but moderately long, crossing at the tip.

Only one species from Formosa.

100. *Phantasmiella cylindrica*, HENDEL.

Ann. Mus. Nat. Hung. XIII., p. 435 (1915).

♂. A bright reddish orange-yellow species. Frons broad, wider than one-third the width of head, strongly produced anteriorly, slightly widened behind, light waxy yellow without any lateral spots, but with a large rounded bright orange-yellow spot just behind the very narrow reddish lunula and also with a more or less distinct dull-coloured median longitudinal stripe which is slightly widened forward and extends to the small blackish ocellar dot; vertex very slightly convex. Face bright pale yellow, but when seen from side light waxy yellow, very short in the middle but the lateral part conspicuously produced below, in profile distinctly hollowed just below the antennal bases; antennal grooves distinct; eye-margins very narrow. Back of the head strongly convex, in colour the same as in frons; cheeks linear below the eye, the genal bristle standing on the extreme hind part. Eyes when seen from side circular, with the anterior angle slightly narrowly rounded, as long as wide. Antennae a little longer than the face, orange-yellow, somewhat brownish tinged and black tipped; 1st jointed about as long as wide; 2nd joint somewhat triangular, about as long as wide, or about  $1\frac{1}{2}$  as long as the basal joint, its apical half furnished with some short black and orange-yellow bristle-like hairs; 3rd joint straight, a little narrower than the apical width of the 2nd joint, gradually

narrowed towards the rounded tip, about  $2\frac{1}{2}$  times as long as the 2nd, or about 3 times as long as wide; arista on the dorsal base of 3rd joint, a little longer than the antenna, distinctly but very shortly plumose, black but the basal fourth yellow. Palpi long and linear, very slightly widened towards the rounded tip, nearly straight, yellowish brown, furnished with a very few very fine brown bristle-like hairs; proboscis also yellowish brown, moderate in size.

Mesonotum nearly parallel-sided, with the anterior margin strongly convex and with the posterior margin straight, light reddish yellow, with 2 very fine rather indistinct brown longitudinal lines extending from the interior corner of humeral callus to the basal corner of scutellum straightly; on the postsutural disc there is also an other such stripe between the wing-base and the stripe mentioned just above; pleurae light yellow, with a small black spot just behind the wing-bases; scutellum, mesophragma and metanotum light reddish yellow.

Abdomen orange yellow; 1st tergite with one pair of broad black longitudinal submedian stripes; 2nd tergite with also such stripes which are distinctly broadened behind, extending behind to the base of the 3rd tergite and hardly fused with each other on its posterior margin, while their anterior end is distinctly narrowed and is connecting with one on the basal tergite; 3rd tergite with a narrow black median longitudinal stripe and with also two rather large but not-well-defined rounded blackish brown submedian spots along the posterior margin, the former stripe extending from the basal margin to the middle; 5th tergite distinctly reddish orange-yellow, longest; posterior margin of each tergite (except the 1st) with a row of bristles, which on the 5th tergite are striking one and are very much longer than the remainings, on the lateral sides of the 2nd tergite there is also a very striking bristle. Ventral side somewhat paler than the dorsum, the lateral margins of each sternite being narrowly castaneous.

All the hairs rather thick and long, yellow, but on the dorsum of abdomen somewhat brownish, longer and more or less bristle-like; all the bristles black, except the genal brown.

Wings light brown, with the stigma and an ill-defined spot at the

tip of each the  $r_{2+3}$ ,  $r_{4+5}$ , m and cu blackish brown, the first spot being much distinct and the last one larger.

Legs yellow; front femora with a row of 3 or 4 long bristles beneath and also with a row of short blackish brown bristles on the outer side, the latter on the apical third removed toward the upper side and became very short; middle femora rather strongly thickened, with two bristles near the tip of the posterior side; middle and hind tibiae with distinct bristles on the upper side, the bristles in the former forming only one row but in the latter two; all the bristles black or blackish brown.

Length: Body 8 mm; wings 5 mm.

Hab. Formosa—Kankau (V)

Type in the Entomological Institute of Kaiser-Wilhelm Gesellschaft, Berlin-Dahlem, Germany.

## XLI. Genus **CALLISTOMYIA**, BEZZI.

Memoirs of the Indian Museum, III., no. 3, p. 124 (1913)

Distinguished from all the other genera by the presence of one distinct propleural bristle and by the morphological character of four posterior femora, as well as by the peculiar pattern of the wings.

Genotype—*Callistomyia pavonina*, BEZZI.

Head very short, a little broader than high, or a little narrower than the thorax; frons very narrow, less than  $\frac{2}{3}$  the eye-width, of the female nearly parallel-sided, but of male distinctly narrowed forwards and narrower than half the eye-width; lunula broad and distinct, but of the male small and triangular; vertex more or less carinate, with the narrow and comparatively short vertical calli; face long, distinctly broadened beneath, concave, with the shallow antennal grooves, the eye-margins being very narrow but distinct; back of the head distinctly swollen behind but the upper area flattened; cheeks narrow and short, with a distinct narrow genal groove; vibrissal edge distinctly but shortly bristled. Eyes oblong, with the posterior margin slightly and the anterior margin conspicuously convex, the lower angle being distinctly



narrower than the upper one. Antennae inserted in the middle of eyes, short, reaching just below to the middle of the face; 3rd joint about  $2\frac{1}{2}$  times as long as the 2nd, rounded at the tip; arista long pubescent. Palpi rather long, strongly curved upwards, narrowly rounded at the tip, with a very few bristles.

Mesonotum robust, moderately broadened towards the posterior margin where it is straight, while the anterior margin is more or less rounded; scutellum comparatively small, triangular, flattened above.

Abdomen about as long as the thorax, oblong, narrowed at the base, with some short lateral and apical bristles; 5th tergite of male a little longer than the 4th; 6th tergite of female about  $\frac{2}{3}$  as long as the 5th; the basal joint of ovipositor conical, rather long, about as long as the two preceding tergites together, longer than wide, with two long bristles in the middle of the lower apical margin; genitalia not prominent; hypopygium asymmetrical, entirely concealed.

Wings rather narrow, with the two very short costal bristles (not wanting as in BEZZI's description), and with all the veins nearly straight; stigma narrow and about half as long as the second costal cell, pointed; anal cell as long as the second basal cell, drawn out into a narrow pointed lower angle;  $r_{4+5}$  distinctly but sparsely bristled in the whole length but on the under side only at the basal half, parallel with  $m$ ;  $r-m$  before the middle of  $1M_2$ , perpendicular;  $m-cu$  also perpendicular and straight.

Legs moderate in length; front femora with a row of bristles beneath; four posterior femora with two rows of short spinules beneath; middle tibiae with two spurs; hind tibiae with a distinct row of short bristles on the outer margin.

Chaetotaxy not complete: Ocellar bristles wanting; fronto-orbital 2: 3, the superior pairs being weaker than the inferior; vertical 2, the inner pair being very much longer than the outer one; postvertical very short, placed very near from each other; genal bristle shorter than the lower inferior fronto-orbital one; bristles of occipital row rather few, but well-developed; propleural strong as the scapular bristles; praesutural and dorso-central wanting; mesopleural 2; sternopleural rather

weak, but pteropleural strong; scutellar bristles 4; notopleural 2; supra-alal 3; all the bristles black.

Only one species from the Japanese Empire.

101. *Callistomyia pavonina*, BEZZI.

Memoirs of the Indian Museum, III., no. 3, p. 125, pl. 9, fig. 36 (1913)

♂ ♀. Yellowish species of rather large-sized. Frons yellow, often very slightly brownish tinged, with two round dark spots which are sometimes very narrow, and of which the upper one is usually larger than the other; lunula whitish or greyish; vertex with a small blackish ocellar dot; face yellowish white or greyish yellow, somewhat darkened below, with the eye-margins yellow, just above the upper mouth-edge there is a round shining black or dark castaneous spot; back of the head waxy yellow, slightly reddish tinged above, covered with many yellowish hairs; cheeks yellow, with the bristle-like hairs of vibrissal edge black. Antennae pale yellow; second joint more or less brownish on its upper side, with the median seta distinct and black; 3rd joint with the upper and lower margins slightly convex; arista very long, black excepting the base pale yellow, black pubescent. Palpi nearly reaching to the upper mouth-edge, dull-yellow, with an ill-defined large round brown patch in the middle of the both sides, blackish bristled; proboscis yellowish brown.

Mesonotum reddish yellow, yellowish pubescent, with three narrow blackish and black-pubescent longitudinal stripes, of which the lateral pair is very narrow and almost always reddish brown, and is sometimes abbreviated; the median stripe always broader and darker than the laterals, but not reaching the posterior margin; the spaces between these three stripes almost always paler and often pale yellow; a short narrow blackish or brownish streak in the notopleural region, this is sometimes extending forwards to the anterior margin along the light yellowish humeral callus; an another very short same-coloured streak, in the postsutural area, placed on outside the lateral median stripes. Pleurae orange-yellow, in the middle with a rather broad reddish brown horizontal streak which extends from just behind the propleuron to the

anterior margin of metapleuron and becomes broader forwards; metapleurae with a large blackish patch along the posterior margin; metanotum somewhat dark coloured, with a distinct blackish lateral spot.

Abdomen pale orange-yellow, pale yellowish pubescent; 2nd to 6th tergite in the female and 2nd to 5th in the male with a narrow entire black basal band, the last band in the both sexes being often interrupted in the middle but never lost although in the indian specimens; on the lateral margins (except the first tergite) with a black stripe which is united with each the basal bands, and which in the last tergite is often abbreviated; ovipositor shining, reddish yellow to orange-yellow; genitalia yellowish.

Wings glass-hyaline, with the following markings: An irregular yellowish brown band from the stigma to the apex of the anal cell, from this band two same-coloured streaks running towards the wing-base, of which the anterior one is in R and the posterior one in the anal cell; second brown band in the middle beginning on the costal margin, a little after the stigma, and extending in the form of an arc over r-m to the posterior wing-margin, this cross-band being prolonged along the costa to the tip of  $r_{2+3}$ ; a very large round brown apical patch extending from the tip to m-cu and from  $r_{4+5}$  to cu, filling up the apical portion of  $1M_2$ , the two-thirds of  $R_5$  and almost the whole of  $11M_2$ , the inferior external angle alone excepted.

Legs pale yellow, black pubescent and bristled.

Length: Body 9-10 mm; wings 8-9 mm.

Hab. Formosa—Kankau (VII); Koshun (V); Kosempo (III), Taito (II).

India.

Types in the Indian Museum, Calcutta, British India.

## XLII. Genus *ACANTHONEURA*, MACQUART

Dipt. exot. III., p. 377 (1843)

*Acanthoneura* (p. p.), ENDERLEIN, Tryp.-Studien, Zool. Jahrb., Abt. f. Syst. XXXI, p. 414 (1911).

*Acanthoneura*, DE MEIJERE, Tijdschr. Ent. LVII., pp. 200, 202 (1914).

*Acanthoneura*, HENDEL, LINDNER, Fl. Palaearkt. Reg. Trypetidae, p. 57 (1927).

Head narrower than the thorax, or broader than high, short; frons distinctly narrower than or as wide as the eye, parallel-sided; lunula

rather conspicuous; vertex more or less carinate, with the long vertical calli; face rather narrow, broadened below, with the broad antennal grooves and the very narrow eye-margins, strongly concave; back of the head moderately swollen behind, but the upper area flattened; cheeks linear; vibrissal edge distinctly bristled. Eyes large, oval, with the posterior margin moderately and the anterior margin strongly convex, gradually narrowed beneath. Antennae broad, reaching below to the middle of the face; 3rd joint  $1\frac{1}{2}$ -2 times as long as wide, rounded at the tip; arista distinctly plumose. Palpi medium-sized, distinctly curved upwards, rounded at the tip, bristly.

Mesonotum longer than wide, distinctly broadened behind; scutellum proportionally small, subtriangular, more or less flattened above.

Abdomen rather broad, as long as the thorax, narrowed apically, distinctly bristled at the posterior margin of each the tergites; 5th tergite of male not very much longer than the preceding one; 6th of female distinctly shorter than the 5th; ovipositor flattened, long, with the basal joint bristly at the tip and a little longer than the two preceding joints together; hypopygium small and spherical; genitalia rather prominent.

Wings rather long, black, with hyaline spots, mainly along the anterior and posterior margins; costal spines very short and almost always two; stigma long, nearly as long as the second costal cell, pointed; anal cell very little longer than or as long as the 2nd basal cell, drawn out into a narrow pointed lower angle;  $r_{2+3}$  waved;  $r_{4+5}$  moderately curved, distinctly bristled on the both sides;  $r-m$  distinctly after the middle of  $1M_2$ , perpendicular;  $m-cu$  also perpendicular, straight.

Legs moderate in length; front femora with a row of bristles; hind femora with a very few rather long bristles near the tip; middle tibiae with a long spur.

Chaetotaxy complete; ocellar bristles very weak, indistinct; fronto-orbital 2:1, the inner vertical much stronger and longer than the outer pair; postvertical and genal strong; bristles of occipital row also strong; dorso-central nearer to the scutellum than to the suture; mesopleural 2;

pteropleural wanting, or presenting but weak; sternopleural strong; scutellar 6, of which the subbasal pair is always very weak.

Genotype: *A. fuscipennis*, MACQUART.

This genus has been very much confused with the *Themara* WALKER by several authorities, and has some difficulties to separate from the genera *Rioxa* WALKER, *Ptilona* v. D. WULP, and *Rioxoptilona* HENDEL; but distinguished from the first by the narrow head of the both sexes, this character being very valid one, and from the remainings by the well-undulate  $r_{2+3}$ .

#### Key to the Japanese species.

1. Pteropleural bristle well-developed;  $r_{2+3}$  strongly waved.....  
..... *formosana*, ENDERLEIN.
11. Pteropleural bristle wanting, or very rarely presenting but very weak;  $r_{2+3}$  moderately undulate.
  2.  $R_5$  with two hyaline spots; genitalia with long ventral plate .....  
..... *trigona*, MATSUMURA.
  22.  $R_5$  with only one hyaline spot; genitalia with short ventral plate.....  
..... *pteropleuralis*, HENDEL.

#### 102. *Acanthoneura formosana*, ENDERLEIN.

Zool. Jahr., Abt. System. XXXI., Heft 3, p. 419 ♀, fig. C (1911).

*Themara formosana*, HENDEL, Ann. Mus. Nat. Hung. XIII., p. 444 (1915)

♂ ♀. Reddish yellow to brown species of medium-sized. Frons distinctly narrower than the eye, very sparsely black-pubescent, reddish brown, somewhat becoming orange-yellow toward the vertex; lunula whitish; vertex paler than the frons, with a distinct black ocellar triangle; face yellowish white, with the eye-margins pale reddish yellow to orange-yellow; back of the head waxy yellow, becoming somewhat reddish above, furnished with many black bristly hairs; cheeks orange-yellow, with the bristly hairs of vibrissal edge long and rather numerous. Antennae orange-yellow; 3rd joint  $1\frac{2}{3}$  times as long as wide, with the upper margin straight and the under margin strongly convex, its tip being narrowly rounded; arista blackish, well-plumose; median seta of

the second joint not prominent, black. Palpi light yellow or orange-yellow, with the upper margin very slightly concave and the under margin strongly convex, furnished with many black bristly hairs nearly all over the surface; proboscis large, yellowish.

Mesonotum pale reddish yellow (♀) or reddish brown (♂), rather densely covered with a very short black pubescence, with 5 narrow blackish stripes of which three median ones are almost always entire and are reaching the posterior margin, but in the male often abbreviate, and the outer pair is very short and is only developed in the praesutural disc along the inner margin of the whitish yellow humeral calli, in the postsutural disc there is also one pair of indistinct blackish sublateral stripes; scutellum in colour similar to the mesonotum, with an ill-defined pale median stripe which becomes broadened apically and is formed a rather distinct apical patch; pleurae in the female similarly coloured as in mesonotum, but in the male always very darker and almost always blackish; mesophragma strongly shining, castaneous, in the female distinctly paler than in the male, in the both sexes with an ill-defined paler median portion.

Abdomen black, black-pubescent and bristled; first tergite always yellow to reddish yellow; 2nd tergite blackish, with a yellowish posterior band, or rarely yellow with black median band; 5th tergite of male strongly shining; genitalia blackish, with the short ventral plate yellowish; basal joint of ovipositor reddish yellow, black pubescent.

Wings longer than the body, blackish brown, the base and axillary lobe being hyaline, with hyaline indentations and spots; stigma nearly as long as the second costal cell;  $1M_2$  distinctly narrowed toward the base, its posterior angle being somewhat pointed; anal cell a little longer than  $M$ ;  $r_{2+3}$  distinctly waved. Three costal indentations distinct; basal one in the middle of the second costal cell very large and subtriangular, more or less yellowish tinged, extending posteriorly to  $rs$ ; second one along the outside of the second costal cell small, occupying the basal third the stigma; 3rd indentation placed at just behind the tip of stigma, glass-hyaline, triangular, extending posteriorly over  $r_{2+3}$ . Two posterior indentations are very large and somewhat triangular, one being placed

in IIM<sub>2</sub> and the other in Cu. Four hyaline spots as follows: One round spot just before the middle of R<sub>5</sub>; a large transverse-long one in 1M<sub>2</sub>, near m-cu, composing of two spots which are often isolated; a small round dot in R, near r-m, always well-defined; another one in the anal cell longer but very ill-defined; on the anterior margin of M, near the tip, there is also a very small angular spot, the latter is often very narrowly prolonged into the base of Cu. Halteres and squamulae yellowish white, the latter being black margined.

Legs orange-yellow, black pubescent and bristled.

All the bristles black; ocellar bristles much weaker and shorter than the postvertical pair; inferior fronto-orbital a little shorter than the lower superior pair; pteropleural strong, but shorter than the sternopleural one; dorso-central and praescutellar bristles nearly the same in length, distinctly finer and shorter than the supra-alar pairs or the praesutural one.

Length: Body 4.5–8 mm; wings 5–8.5 mm.

Hab. Formosa—Shinchiku (VII); Shu-Shu (I, II); Suisha (V); Arisan (X); Taihorin (VII); Tabani (III); Fuhosho (III); Sokutsu (VI); Kanshirei (X); Kosempo (I, III, IV); Hozan (VII); Tainan (II); Koshun (IV, V); Taito (II, III); Urai (VIII); Taichu (XII).

Type in the Natural History Museum of Stettin, Germany. This species is rather common in the Island throughout, and is very often captured on the stems of Bamboos.

### 103. *Acanthoneura trigona*, MATSUMURA.

Thous. Ins. Jap. II., p. 117, Pl. XXVIII., fig. 8 (*Trypeta*) (1905).

♂ ♀. Pale yellowish brown to dark reddish brown species, of medium-sized. Frons about as broad as the eye, or a little longer than wide, flat but a little swollen forwards, orange-yellow or pale reddish brown, or often with an ill-defined large dark median spot just above the lunula and with also one pair of dark reddish brown longitudinal spots throughout the upper half, furnished with a very few short blackish

pubescence; lunula greyish white; vertex with a proportionally large black ocellar dot, with the vertical calli prolonged forwards over the middle of the frons and shining pale yellow; face yellow to brownish yellow, often brown on the reflexed margin; the epistoma almost always black-banded; back of the head orange-yellow, almost always with a pair of large reddish brown or blackish crescent-shaped spots, and covered with a few sparse somewhat bristle-like hairs; cheeks pale yellow to ochraceous; black bristles of the vibrissal edge rather long and numerous. Antennae yellowish brown, with the two basal joints almost always yellowish white to pale yellow; 3rd joint shorter than twice the width, its apex being broadly rounded; arista blackish, short-plumose; median seta of the second joint black, short. Palpi yellow to brown, black-bristly, rather less curved, nearly reaching the upper mouth edge. Proboscis pale brownish.

Mesonotum pale reddish yellow to dark brownish, black pubescent, with 7 narrow blackish brown to black stripes as follows: One median stripe narrow but distinctly broadened behind, almost always not reaching the anterior margin; submedian stripes conspicuous, entire, each united together with the median stripe on the posterior border; lateral pair extending from the inner margin of the humeral callus to the posterior base of the wing along the upper margin of the notopleuron, almost always interrupted at the suture; sublateral one very short, and very indistinct, in the postsutural disc; scutellum with two blackish longitudinal spots which are connecting with the submedian stripes of the mesonotum, and are often very widened so that the scutellum is nearly entirely black left only a small yellow apical spot; humeral calli and notopleurae paler than the mesonotum, almost always pale yellowish; pleurae shining, dark castaneous or black, or often mainly orange-yellow with a dark upper longitudinal band; mesophragma strongly shining, black or rarely castaneous; on just behind the wing-bases there is a very small but distinct black dot.

Abdomen relatively long, orange-yellow, with the first tergite and a pair of transverse lateral spots on each the 2nd to last tergites black, but the 5th tergite of male strongly shining and entirely black; these



spots very often united with each other on each tergite (so that each tergite is black and has yellow somewhat triangular posterior band), excepting those on the second tergite; basal joint of ovipositor  $\frac{2}{3}$  as long as the 5th, or about  $1\frac{1}{2}$  times as long as wide, strongly shining black, black pubescent, while the second joint is entirely yellow; genitalia blackish, with the very long ventral plate yellowish brown, the latter armoured with two very distinct hooks.

Wings distinctly longer than the body (without ovipositor), blackish brown, except the alulae and the bases hyaline; hyaline indentations and spots as follows: Second costal cell pale brown, with a very large quadrate hyaline indentation which is extending into the base of R; 2nd costal indentation at the base of black stigma, small and quadrate; largest costal indentation just after the stigma triangular, extending nearly to  $r_{4+5}$  over  $r_{2+3}$ ; two posterior-marginal indentations very large but very irregular in shape, the distal one being occupied nearly throughout IIM<sub>2</sub> leaving the narrow base and anterior margin, the proximal one in Cu being much irregular leaving the small basal and apical brown spots. R<sub>5</sub> with two small round hyaline spots in the middle; R with one, rather near r-m; 1M<sub>2</sub> with two round hyaline spots which are united with each other, forming a short irregular transverse band near m-cu, and with also an ill-defined longitudinal subhyaline streak in the middle along cu. Anal cell nearly as long as M, with a large subhyaline spot; all the cells rather narrow;  $r_{2+3}$  moderately wavy. Halteres and squamulae whitish yellow.

Legs orange-yellow to reddish brown, with the femora almost always very darkened, black pubescent and bristled.

Length: Body 5.5–8.5 mm; wings 6–7 mm.

Hab. Japan—Toikanbetsu (VII); Sapporo (IV, VI).

This species clearly belongs to the genus *Acanthoneura*, not as HENDEL thought.

Type in the Entomological Museum of Hokkaido Imperial University, Sapporo, Hokkaido.

104. *Acanthoneura pteropleuralis*, HENDEL.

LINDNER, Fl. Palaeark. Trypetidae, p. 58, Pl. II. fig. 8, Textf. 17 (1927).

Very closely allied to the preceding species, distinguished from that only by the followings:

Arista longer plumose; wings with only one hyaline spot in  $R_5$  and also in  $IM_2$ , but in the latter there are very often two spots; pleurae always yellowish, with a narrow upper streak; abdomen black, excepting the two basal tergites yellow, the 2nd tergite having a transverse widely interrupted black median band, and the 3rd a yellow median posterior band and often in the female also in the 4th; basal joint of ovipositor black, with the basal half yellow; ventral plate of genitalia very short, without distinct hooks.

Hab. Japan—Osaka (VI), Daisen (VII), Iwawaki (VI), Iwate (VII).

Corea—Koryo (VIII)

Amur.

Japanese species well agreed with HENDEL's description and figures, but I do not know how the male-genitalia is in the Type.

XLIII. Genus *DIARRHEGMA*, BEZZI.

Mem. Ind. Mus. III., 3, p. 108 (1913).

Very near to *Acanthoneura* MACQUART and *Themara* WALKER, but easily distinguished from the both by the straight  $r_{2+3}$ ; and also allied to *Rioxoptilona* HENDEL, differing from that mainly in the narrow eyes.

Genotype: *Dacus modestus*, FABRICIUS.

Head about as long as a half the width, or a little broader than high, and a little narrower than the thorax; frons narrower than the eye, about as long as  $1\frac{1}{2}$  times the width, slightly broadened forwards, flat but when seen from side convex; vertex with the straight vertical calli which are about half as long as the frons, and with an ocellar triangle at just front the vertical carina; lunula small; face convex, moderately broadened beneath, with the upper mouth-edge deflexed, with the narrow eye-margins and the distinct antennal grooves; back of

the head flat, but moderately swollen beneath; cheeks narrow, with a very indistinct genal groove; vibrissal edge provided with some short bristle-like hairs. Eyes oblong, about as long as twice the width, with the both angles rounded, the lower one being a little narrower than the the upper angle. Antennae inserted at the middle of eyes<sup>(13)</sup>, reaching to the middle of the face; 3rd joint short, about as long as  $1\frac{1}{2}$  times the width, gradually narrowed toward its rounded tip; arista plumose, with longer hairs above; median seta of the second joint very long. Palpi hardly reaching to the upper mouth-edge, slightly curved upwards, bristly; proboscis large.

Mesonotum about as long as  $1\frac{1}{2}$  times the width, rounded above; scutellum large, triangular, flat above.

Abdomen narrowed at the base; 6th tergite of female much shorter than the preceding one, distinctly bristly along the posterior margin; ovipositor flattened, a little shorter than the last three tergites together; genitalia not prominent.

Wings blackish brown, with hyaline indentations and spots; two costal spines distinct<sup>(13)</sup>; longitudinal veins straight, but  $r_{4+5}$  more or less curved;  $r_{2+3}$  distinctly bristly throughout the whole length, but not on the under side; r-m distinctly beyond the middle of  $1M_2$ ; m-cu perpendicular, but the posterior angle of  $1M_2$  being more or less pointed; stigma distinctly shorter than the second costal cell, pointed; anal cell longer than the second basal cell, drawn out into a long pointed posterior angle.

Chaetotaxy complete; ocellar pair very rudiment; fronto-orbital 2: 2; vertical 2; postvertical pair weak and parallel; genal bristle rather weak; a row of occipital black bristles; dorsocentral in the middle of the postsutural disc, or a little behind the line connecting the anterior supra-alar bristles; mesopleural 2; ptero- and sternopleural strong; scutellar 6.

Only one species from Formosa.

(13) Buzzz's description may be incorrect.

105. *Diarrhagma unicolor*, sp. nov.

(Fig. 67; Pl. VIII, fig. 6)

This new species is very doubtful to be placed into the genus *Diarrhagma*, because it differs in the shape of face and also of frons. In considering these characters it may be rather belonged to the genus *Acanthoneura* MACQUART; but it differs from that in the straight longitudinal veins and in the large hyaline wing-bases, and also in the chaetotaxy, as in those of *Diarrhagma*. Probably the present species stands in a new genus between the two mentioned just above.

Allied to *modestum*, but easily distinguished by the concave face by the parallel-sided frons, as well as by the colouration of body.

♂ ♀. Frons reddish yellow, slightly paler towards the sides, covered with a very few blackish pubescence, parallel-sided; lunula distinctly whitish-tomentose; vertex paler than the frons, with a small blackish ocellar dot, and with the well-defined strongly shining pale waxy yellow vertical calli; face concave, with the upper mouth-edge reflexed, pale reddish yellow, with the very narrow eye-margins whitish tomentose; back of the head orange-yellow, becoming pale yellowish beneath, furnished with a very sparse blackish pubescence; cheeks pale yellow, with rather long black bristle-like hairs of the vibrissal edge.

Antennae orange-yellow, with the 3rd joint more or less brownish, exceeding below to the middle of the face; arista dark brown, with the base yellow, blackish plumose. Palpi yellow, with a few black bristles on the interior side, and with a sparse short pubescence on the exterior side; proboscis reddish yellow.

Mesonotum dirty reddish yellow, black pubescent, very rarely with three very indistinct short and fine brown stripes in the middle, along the interior margin of humeral calli there is a very fine brown streak; humeral calli and pleurae yellow, almost always paler in the former; scutellum somewhat paler than the mesonotum, with a small indistinct whitish apical spot; mesophragma brown, with a very ill-defined paler median streak.

Abdomen orange-yellow; with the 3 (♂) or 4 (♀) apical tergites

black, black pubescent and bristled; the second tergite with an interrupted brown median transverse band, and the 3rd tergite with a flat triangular yellow median band along the hind margin; 6th tergite of

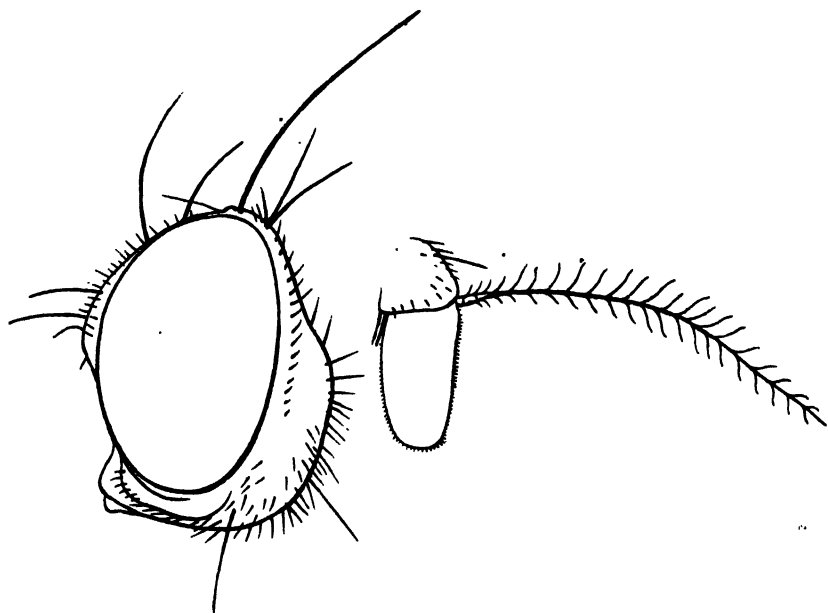


Fig. 67.

*Diarrhagma unicolor*, sp. nov. ♀,  $\times$  ca 23. Left antenna,  $\times$  ca 40.

female hardly half as long as the 5th; basal joint of ovipositor yellowish, a little longer than the two preceding tergites together, or about as long as wide; genitalia rather prominent, light yellow.

Wings blackish brown, with the basal third hyaline, with the two nearly equal short costal spines (in *modestum* one is very long); stigma about  $\frac{2}{3}$  as long as the second costal cell (in *modestum* about a half); hyaline indentations and spots as follows: Two costal indentations distinct, a smaller one of which is quadrate and is placed at the base of the stigma, and a larger one is triangular and is occupying the basal half the mouth of R, extending behind to  $r_{4+5}$ . Three posterior indentations rather ill-defined; apical triangular one at the base of  $IIM_2$ , not reaching m; middle one narrowest, in  $1M_2$  along m-cu; basal one

largest, somewhat triangular, in the middle of Cu, extending above to the median streak in 1M<sub>2</sub> and connecting with the basal hyaline portion along the wing-margin. Only two hyaline spots very small, one being placed in the middle of R, and the other somewhat near to r-m in R. Halteres and squamulae very light yellow, the former having an indistinct brownish spot at the base of knob, and the latter blackish margined.

Legs light yellow, black pubescent and bristled.

All the bristles black; sternopleural and intermediate scutellar bristles rather weak.

Length: Body 7-8 mm; wings 7.8-8.1 mm.

Hab. Formosa—Kanshirei (X); Arisan (V).

Types in the Entomological Museum of Government Research Institute, Taihoku, Formosa.

#### XLIV. Genus **RIOXOPTILONA**, HENDEL.

Wien. Ent. Zeit. XXXIII., p. 78 (1914)

Genotype—*Trypeta vaga*, WIEDEMANN.

Head broader than high or narrower than the thorax, about a half as long as wide; frons flat, narrower than the eye, parallel-sided, when seen from side curved outwards; lunula moderate in size; vertex slightly carinate, with the long vertical calli which are a half as long as the frons; face concave, conspicuously widened beneath, with the very shallow antennal grooves and the very narrow eye-margins, the upper mouth-edge being distinctly reflexed; back of the head distinctly swollen, the upper fourth more or less concave; cheeks about  $\frac{1}{4}$  as high as the eye, without genal groove, with the vibrissal-edge distinctly bristled. Eyes oval, with the posterior margins rather slightly convex, the upper angle being rather angular. Antennae inserted at just below the middle of eyes, not reaching to the upper mouth-edge; 3rd joint rather broad, about twice as long as wide, or not more than double the length of the second, with its apex narrowly rounded; arista sparsely plumose. Palpi broad, broadest after the middle, slightly curved upwards and rounded apically, long bristled; proboscis moderately large.

Mesonotum about  $1\frac{1}{4}$  times as long as wide, slightly broadened behind, more or less flattened; scutellum triangle, distinctly flattened above.

Abdomen about as long as the thorax, often longer than the latter, not distinctly narrowed at the base, along the posterior margin of each the tergites distinctly bristled; 5th tergite of male a little shorter than the two precedings together and much narrower; 6th of female about a half as long as the 5th; two basal tergites not fused together; ovipositor depressed, its basal joint being about as long as wide or the three preceding tergites together; genitalia rather prominent, the penis being very long, but the ventral plate is very small; hypopygium very small, entirely concealed beneath the 5th tergite.

Wings broad or narrow, with the two short costal spines; stigma long and pointed, about as long as or a little shorter than the second costal cell; anal cell a little longer than or as long as M, drawn out into a rather long pointed lower angle;  $r_{2+3}$  straight;  $r_{4+5}$  more or less curved, distinctly bristled throughout the whole length, but on the under side there are a few very sparse bristles at the basal half or less than that; r-m after the middle of  $1M_s$ , perpendicular; m-cu rather short, perpendicular, nearly right-angled with cu.

Legs rather short; front femora with a row of long bristles beneath; middle tibiae with a single long spur; hind tibiae with a row of short bristles; hind femora with some long bristles near the tips.

Chaetotaxy complete: Ocellar very weak or entirely wanting; fronto-orbital 2: 2; vertical 2, the inner pair being strongly developed; post-vertical rather long, parallel; genal normal; bristles of occipital row well-developed; propleural distinct as the scapular pairs; noto- and mesopleural 2; dorsocentral bristles just behind the line connecting the anterior supra-alar bristles, rather weak; ptero- and sternopleural also rather weak; scutellar 6, the intermediate pair being almost always shorter.

Two species, found in the Japanese Empire, are distinguished as follows:

1. Pterostigma as long as the second costal cell; two hyaline spots in  $R_5$  placed far apart from each other and in a horizontal line; a hyaline spot in  $1M_2$  a little after r-m; femora yellowish ..... *speciosa*, HENDEL.
11. Pterostigma a little shorter than the second costal cell; two hyaline spots in  $R_5$  placed very near from each other and in an oblique line; a hyaline spot in  $1M_2$  very near to m-cu; femora blackish, with the apices yellow..... *femorata*, sp. nov.

### 106. *Rioxoptilona speciosa*, HENDEL.

Ann. Mus. Nat. Hung. XIII., p. 445, Pl. VIII, fig. 6, ♂ (1916).

♂ ♀. Pale reddish yellow species, of rather small-sized. Frons somewhat shining, yellow, becoming reddish brown toward the lunula, covered with rather many blackish pubescence; lunula greyish white, brown or blackish marginate; vertex with a very small blackish ocellar dot; vertical calli strongly shining yellowish white; face whitish yellow, with a very broad brown lower marginal band, the latter united with the blackish transverse band on the genal groove, the eye-margins being pale orange-yellow; back of the head pale yellow to orange-yellow, with a distinct transverse band along the upper margin of occipital foramen reached the eye-margins and with a spot at just below the upper angle of eyes, the both being blackish and often very narrow, furnished with rather many strong black bristles which become very sparse and very short towards the eye-margins and vertex; cheeks with a distinct blackish genal groove. Antennae pale yellow to yellow, with the upper half of the 3rd joint and the basal sides of the second joint more or less brownish; 3rd joint with the upper margin nearly straight and the under margin strongly convex; arista black, with the base pale yellow, black plumose; median seta of the second joint about as long as the joint but shorter than that width. Palpi light yellow or yellowish white, black-bristly, with the upper margin nearly straight and the under margin convex; proboscis yellow.

Mesonotum shining pale yellow to pale reddish yellow, black pubescent, with 3 pairs of narrow blackish stripes of which the median pair extends from just front the inner end of the suture to the base of scutellum, the stripes being widely interrupted after their middle and



then distinctly broadened hindward, on the posterior border there is a pair of black spots; submedian stripe outside the median stripe very narrow and short, placed only in the middle of the postsutural disc; lateral pair along the inner margin of humeral calli extending nearly straightly behind to the upper base of wings and widely interrupted at the suture. Pleurae almost always paler than the mesonotum, with two narrow blackish streaks of which the superior one along the upper margin is entire from the lower margin of humeral calli to the under base of wings, and the inferior one is short, extending from the infero-posterior border of mesopleurae to the inferior margin of hypopleurae, in the dark specimens, (almost always collected in high level over 1000 m) entirely blackish and with a reddish yellow streak on a little below the upper margin of pleurae; mesophragma blackish; scutellum similar to the mesonotum in colour, with two basal dots continued with the median stripes of the mesonotum and two short lateral streaks at the lateral margins, the both being black.

Abdomen yellow to reddish yellow, black pubescent, with a black band on the anterior margin of each tergite, the band being interrupted in the middle and becoming broader toward the lateral margins, the interrupted spaces being broadened forwards; 5th tergite of male and basal joint of ovipositor entirely shining black; ventral plate of male-genitalia yellowish, very slender and about  $\frac{2}{3}$  as long as the 5th tergite, with a pair of very small yellowish hooks which are black-tipped.

Wings blackish brown to nearly black, the base and axillary lobe hyaline, with hyaline indentations and spots as follows: First costal indentation in the second costal cell very large, extending posteriorly to  $r_s$ ; second one, at the base of the stigma, small and quadrate; third indentation nearly in the middle of  $R$ , along the tip of the stigma, triangular, extending posteriorly into  $R_s$  but not reaching  $r_{4+5}$ . Two hind marginal indentations rather irregular in shape; the apical one, in  $IIM_2$ , always smaller than the 3rd costal indentation, placed in the middle of the cell and not reached  $m$ ; the basal one, in  $Cu$ , very large and very irregular, connecting with the rather transverse hyaline spot in  $1M_2$ . Four other hyaline spots small and nearly rounded; two in the middle

of  $R_s$ , wide apart from each other; one smallest spot in  $R$ , rather near to  $r-m$ ; the remaining one in  $1M_s$ , near to  $r-m$  but just after that. Halteres and squamulae pale yellow, the latter being black-fringed.

Legs yellow, black pubescent and bristled, rarely brownish on the outer side of femora excepting the tip.

All the bristles black.

Length: Body 5–6.5 mm; wings 5–6.5 mm.

Hab. Formosa—Hosan (VI); Shishito (V); Kayahara (IX); Mizuho (VIII); Heishana (IV).

Type of male preserved in the Entomological Institute of Kaiser Wilhelm-Gesellschaft, Berlin-Dahlem, Germany; of female in the Entomological Museum of Government Research Institute, Taihoku, Formosa.

#### 107. *Rioxoptilona femorata*, sp. nov.

(Fig. 68; Pl. IX, fig. 4)

♂. Distinguished from the preceding species by the patterns of wings and body. Frons very slightly narrowed forwards, yellow, sparsely black-pubescent, with the anterior half entirely black; lunula black, yellowish margined; vertex with a blackish ocellar triangle; vertical calli proportionally shorter than in *speciosa* HENDEL; face black, with the eye-margins yellow; back of the head black, brownish below, the lower half and the eye-margins being yellow, in the middle there is a rather broad transverse yellow band, which is distinctly narrowed toward the occipital foramen and is interrupted in the latter, sparsely black-pubescent; cheeks black, somewhat brownish upwards. Antennae brown; 3rd joint with the upper margin very slightly concave near the tip; arista black, with the base yellow, the rays of plumosity being distinctly shorter than in *speciosa*. Palpi and proboscis yellow.

Mesonotum orange-yellow, the humeral calli being yellowish white, with 4 pairs of blackish stripes as follows: Median pair, from the middle of the praesutural disc to the base of scutellum, gradually broadened behind; submedian pair in the postsutural disc from just behind the

inner tip of the suture to the lateral junctions of scutellum, united with the median stripe posteriorly; sublateral pair oblique, from the inner corner of humeral calli to the base of wings, the anterior end being strongly broadened and inwardly notched; lateral stripe very faint and very narrow, along the extreme side. Pleurae blackish, with yellowish white notopleural streak; pteropleuron with a large triangular pale yellow patch at just beneath the wing-base; hypopleuron irregularly yellowish; mesophragma black. Scutellum pale orange-yellow, with a very large black basal corner patch.

Abdomen yellow, with the 5th tergite and the lateral patches black. Lateral patches are as follows: On the first tergite nearly quadrate,

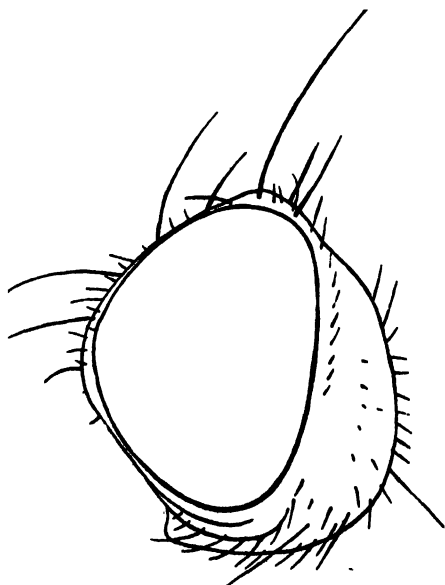


Fig. 68.

*Riozoptilona femorata*, sp. nov. ♂,  $\times$  ca 35.

not occupied entire lateral borders but leaving the upper corners where are yellowish white; on the second tergite restricted only at the lateral margins; the remaining patches very large, leaving a nearly triangular median yellow patch on the 3rd and 4th tergites together, the latter being narrowed behind. Genitalia pale yellow, with the hypopygium black.

Wing-pattern allied to *speciosa*, but differs as follows: Two basal costal indentations united together, forming a broad hyaline costal streak; the apical costal indentation reaching  $r_{4+5}$ ;

two spots in  $R_5$  obliquely placed near from each other, the distal one touching with  $r_{4+5}$  and the proximal one with  $m$ ; one spot in  $R$  very minute; one spot in  $1M_2$  very large, along  $m-cu$  extending from  $m$  to  $cu$ , its inner margin being distinctly sinuate; the longitudinal streak in  $1M_2$  longer than in *speciosa*; one indentation in  $IIM_2$  very large, nearly oc-

cupied the basal two-thirds, but the posterior half smoked; Cu hyaline, leaving the apical one-third and upper basal corner.

Legs pale yellow, blackish pubescent; femora blackish brown, with the tip yellowish; front tibiae more or less brownish.

Length: Body 5.5 mm; wings 5.6 mm.

Only one male, collected at the Prefecture Iwate (IX), Japan, preserved in the Entomological Museum of Government Research Institute, Taihoku, Formosa.

#### XLV. Genus *PHORELLIOSOMA*, HENDEL.

Wien. Ent. Zeit. XXXIII, p. 85 (1914); Ann. Mus. Nat. Hung. XIII, p. 445 (1915).

*Chaetomerella*, DE MEIJERE, Tijdschr. v. Ent. LVII, p. 212 (1914).

Genotype—*Phorelliosoma hexachaeta*, HENDEL.

Head distinctly narrower than the thorax, or much broader than high, about a half as long as wide; frons very slightly concave, about as wide as the eye, very slightly broadened forwards, when seen from side distinctly rounded; lunula sunk, distinctly crescent-shaped; vertex more or less carinate, with the rather flat vertical calli, which are not reaching the middle of frons; face strongly concave, the upper mouth-edge being conspicuously reflexed, with the rather indistinct antennal grooves and narrow eye-margins, the former not reaching the mouth-edge; back of the head rather strongly swollen, its upper half being very slightly concave; cheeks about  $\frac{1}{4}$  as high as the eye, with the broad but very shallow genal groove; the vibrissal-edge not bristly, but hairly. Eyes oblong, about a half as wide as long, the posterior margin being less convex than the anterior margin, with the both angles nearly equally rounded. Antennae inserted at just below the middle of eyes, broad, not reaching to the upper mouth-edge; 3rd joint a little longer than the 2nd or its width, rather narrowly rounded at the tip; arista very sparsely and shortly pubescent. Palpi small, but rather broad, slightly curved upward, rounded at the tip, very sparsely bristled; proboscis relatively large.

Mesonotum short, but longer than wide, subquadrate, broadest in

the middle, convex above; scutellum rather short, subtriangular, convex above.

Abdomen about as wide as the thorax, a little shorter than the latter, broadest at the middle, long-bristly at the tip; 5th tergite of male very large, a little longer than the two precedings together; 6th of female about a half as long as the 5th; ovipositor depressed, about as long as abdomen, its basal joint being a little longer than or as long as the three preceding tergites together and furnished with very few long bristles at the tip; hypopygium small but distinct; genitalia large, with a long ventral plate which becomes very broad and its apex bent hook-like; penis very slender and much longer than the ventral appendage.

Wings narrow and rather long, without distinct costal spine; stigma long, but distinctly shorter than the second costal cell, pointed; anal cell as long as the 2nd basal cell and a little broader than that, its lower angle being very shortly pointed;  $r_{2+3}$  nearly straight;  $r_{4+5}$  more or less waved, very sparsely bristled on the both sides;  $r-m$  after the middle of  $1M_2$ , straight and perpendicular;  $m-cu$  short, perpendicular, very slightly waved.

Legs rather slender; front femora with a row of very few bristles on the outer side; middle tibiae with a single long spur; hind tibiae with a row of very short rather indistinct bristles.

Chaetotaxy complete: Ocellar bristles rudiment; fronto-orbital 2: 2, equidistant; inner vertical about twice as long as the outer pair; post-vertical short, rather wide apart from each other; genal bristle not very strong; bristles of occipital row sparse, but conspicuous; propleural entirely wanting; dorso-central distinctly nearer to the suture than to the scutellum; notopleural 2; mesopleural 1; sternopleural very weak; pteropleural much more weak; scutellar 6, the intermediate pair being very weak.

Only one species from Formosa.

108. *Phorelliosoma hexachaeta*, HENDEL.

Ann. Mus. Nat. Hung. XIII., p. 447, pl. IX, fig. 13 (1915).

Shining, reddish yellow species of rather small-sized, with the abdominal end black and with the wings clearly hyaline, the latter having two large blackish brown patches and one very short similar coloured transverse streak.

♂ ♀. Frons orange-yellow, not shining, covered with a few blackish erect pubescence; lunula fresh yellow; vertex in colour similar to the frons, with a distinct black ocellar dot; the vertical calli shining pale yellow; face very pale yellowish white, with the reflexed lower margin more or less brownish, and with the eye-margins distinctly pale orange-yellow dusted; back of the head reddish yellow, gradually palened beneath, very sparsely blackish pubescent; cheeks pale orange-yellow; the sparse hairs of vibrissal edge black. Antennae orange-yellow, with the second joint more or less brownish; 3rd joint with the upper margin moderately and the under margin strongly convex; arista blackish brown, with the base dark yellow; median seta of the second joint very fine, not longer than the joint. Palpi orange-yellow, with the bristles black and long; proboscis yellow, but almost always more or less reddish or brownish.

Mesonotum shining, reddish yellow, with the humeral calli pale yellow, yellowish pubescent, along the hind margin there is a pair of round blackish spots, each being placed at just inside the lateral junctions of scutellum; postsutural disc with a pair of very short blackish brown submedian stripes, which are, however, very often obsolete; scutellum orange-yellow; pleurae a little paler than the mesonotum, with a distinct dark castaneous streak along the lower margin of notopleuron; postscutellum black, often becoming paler toward the mesophragma.

Abdomen shining, pale reddish yellow, with the three apical tergites black, but the 3rd tergite in the male only in the posterior third; pubescence in the yellowish portions yellow, in the black portions black; basal joint of ovipositor shining black, black pubescent, while its two apical joints are paler; genitalia blackish, but the appendages yellowish and the penis being orange-yellow.

Wings clearly hyaline; median patch subquadrate, extending from the stigma to m and broadening from the junction of  $r_{4+5}$  to just after r-m, with a small hyaline spot before r-m along m; apical patch larger than the median one, its inner margin being rounded and extending from the middle of the mouth of  $R_1$  to the apical third the mouth of  $IIM_2$ ; transverse streak on m-cu, reaching  $r_{4+5}$  anteriorly. Halteres and squamulae light yellow, the latter being blackish margined.

Legs light yellow, black pubescent and bristled.

All the bristles black, pteropleural bristle very often wanting.

Length: Body (without ovipositor) 4.5-5 mm; wings 4.7-5.1 mm.

Hab. Formosa—Hozan (VIII); Taihoku (XII); Arisan (X); Musha (V); Taiko (Shinchiku II); Fuhosho (V); Taito (II, III); Funkiko (IV); Toroen (VIII); Shikikun (V); Taichu (XII).

Types in the National Museum of Hungary, Budapest.

This species is very common in the mountainous districts nearly throughout the whole island, to 2300 m high, excepting in northern part where it is found in the plain, and it is usually found on the flowers of *Tetrapanax papyrifera* KOCH.

#### XLVI. Genus **ORTALOTRYPETA**, HENDEL.

LINDNER, Palaearkt. Fl. 49, Trypetidae, p. 55 (1927).

Allied to *Themaroides*, HENDEL, but distinguished by the strong ocellar bristles, by the strong bristles of vibrissal edge, by the straight  $r_{2+3}$ , by the distinctly oblique r-m, and by the proportionally small eyes.

Genotype—*Ortalotrypeta idana*, HENDEL.

Head narrower than thorax, about half as long as wide or a little higher than long; frons broader than eye, about as long as wide, flat but very slightly elevated; lunula sunk, proportionally small; vertex rounded, not carinate, with the vertical calli flat and not defined; face about as long as wide, slightly widened below, in profile straight and oblique behind, with the upper mouth-edge straight, with the eye-

margins moderate in width and nearly the same width throughout, and with the antennal grooves broad and rather deep; back of the head strongly convex, but no special lateral swellings, in profile about half as wide as high or a little broader than eye; cheeks narrow, with a distinct genal groove, the mouth-edge being oblique below and very extending behind; vibrissal edge furnished with 2 or 3 long bristles which are directed inwards. Eyes proportionally small, placed forwards and oblique, with the anterior margin strongly and the posterior one slightly convex, the upper angle being broader than the lower one. Antennae rather narrow, reaching below to the middle of face; 3rd joint a little longer than the 2nd, about as long as twice the width, slightly narrowed toward the rounded tip; arista distinctly pubescent but not plumose as in *Themaroides*; 2nd joint in our species large, longer than twice the basal joint, furnished with numerous bristles, in the middle of upper side there is no conspicuous seta, the infero-exterior margin provided with three very long bristles. Palpi rather small, straight, with the tip rounded; proboscis small.

Mesonotum strongly convex, a little longer than wide, the suture being interrupted in the median third and its divided portions very slightly oblique; scutellum flat. Abdomen about as long as thorax, broadest in the middle.

Wings rather narrow, broadest in the middle and gradually narrowed toward the both ends, the apex being narrowly rounded, with one distinct costal spine; all the veins nearly straight,  $r_{4+5}$ <sup>(14)</sup> distinctly bristled nearly throughout the whole length on the both sides; r-m oblique, placed a little after the middle of  $IM_2$ , the latter is narrow, long and distinctly broadened apically; stigma small, about half as long as the second costal cell, sharply pointed; anal cell distinctly shorter than M, with the lower angle very shortly produced.

Legs slender; intermediate tibiae with two conspicuously long apical spurs.

Chaetotaxy complete: Ocellar bristles very strong and long; fronto-orbital 2:3; postvertical very weak, parallel, behind the each interior

(14) In *Themaroides*  $r_{4+5}$  is distinctly bristled, not as in HENDEL'S description.



vertical bristle there is a very strong bristle which is one of post-vertical bristles; supra-alar bristles 4; praescutellar 2; dorsocentral a little behind the anterior supra-alar bristle; humeral 3; mesopleural 3; scutellar 3 pairs.

This genus is very conspicuous one, being somewhat allied to *Themarictera*, *Trypanocentra*, *Themarohystrix* and *Themaroides*, HENDEL.

107. *Ortalotrypeta isschikii*, MATSUMURA.

(Pl. X, fig. 3)

Thous. Ins. Jap. Add. II., p. 420, pl. XXIII, fig. 16 (*Hexachaeta*) (1916).

*Phorelliosoma isschikii*, HENDEL, LINDNER, Palaearkt. Fl. XVI., Trypetidae, p. 56 (1927).

Easily distinguished from *gigas* HENDEL and *idana* HENDEL by the long 2nd antennal joint, and by the wing-pattern.

♂. Large species of shining yellowish coloured. Head light yellow, with the frons, eye-margins and cheeks more or less reddish brown; frons covered with a few black somewhat bristle-like hairs; vertex with an ill-defined brown ocellar dot; back of the head covered with numerous black strong hairs; face with very narrowly margined upper mouth-edge. Antennae orange-yellow, black bristled; arista blackish, with the basal fifth pale yellow, the pubescent being black. Palpi and proboscis castaneous, black bristled.

Mesonotum pale dirty yellow, somewhat greenish, covered with numerous short black pubescence; pleurae dirty yellowish, very sparsely black-pubescent, on the mesopleuron there is an irregular rather large brownish patch; scutellum and mesophragma paler than mesonotum.

Abdomen reddish brown, darkened toward the anal end, densely covered with a short black pubescence which becomes longer towards the lateral margins and apex, genitalia reddish brown, the ventral plate being very short, with one pair of the black-tipped inner hooks rather conspicuous.

Wings pale yellowish, with the apical border blackish brown, but in each  $R_2$  and  $1M_2$  there is a hyaline round spot and also at each the base of  $R_2$  and tip of  $1M_2$  an ill-defined hyaline spot, therefore the

apical blackish portion is forming a W-shaped spot; stigma and one small dot on r-m blackish brown; base of  $R_1$  and nearly entire R glass hyaline; allulae and the posterior two-thirds of Cu hyaline but more or less smoked.

Legs pale dirty yellow, more or less brownish toward the base, black pubescent and bristled.

All the bristles black, very long; apical scutellar crossing; 3 inferior fronto-orbital very near to the antennal base and also from each other, distinctly shorter than ocellar bristles.

Length: Body 9.5 mm; wings 11 m.

Hab. Japan—Odaigahara-yama (Yamato VIII); Nasu (XII).

Type from which I described above, in the Entomological Museum of Hokkaido Imperial University, Sapporo, Japan.

#### XLVII. Genus **HEXACINIA**, HENDEL.

Wien. Ent. Zeitg. XXXIII., p. 82 (1914); Ann. Mus. Nat. Hung. XIII., p. 459 (1915).

Genotype—*Acinia stellata*, MACQUART.

Head broader than thorax, or broader than high, about as long as half the width; frons flat, wider than eye, slightly narrowed forwards; lunula very narrow; vertex sharply carinate, with the narrow and flat vertical calli; face narrow, subquadrate, very slightly broadened beneath, convex, with the upper mouth-edge strongly reflexed, and with the antennal grooves so very broad and shallow that the face is nearly entirely occupied by them, left a median narrow ridge, the eye-margins being very narrow; back of the head slightly concave on the upper area, while the lower area is rather strongly swollen hindwards but not laterally; cheeks linear, with very narrow indistinct genal groove; the vibrissal edge distinctly bristled. Eyes oblong, longer than twice the width, the upper angle being pointed and the lower angle rounded. Antennae broad, not reaching to the upper mouth-edge; 3rd joint very broad, about  $1\frac{1}{2}$  times as long as wide, or distinctly shorter than twice the 2nd, rounded at the tip; arista very shortly pubescent. Palpi

distinctly two-jointed, and distinctly bristled; the apical joint shorter than the basal one, about  $1\frac{1}{2}$  times as long as wide, rounded at the tip; the basal joint slender, widened toward the tip. Proboscis rather long, but not slender.

Mesonotum rather short, a little longer than wide, moderately convex, subquadrate; scutellum subtriangular, a little shorter than wide, flattened above.

Abdomen oval, shorter than thorax, but distinctly wider than the latter; long-bristled at the tip and lateral margins; 5th tergite of male a little longer than the preceding one; 6th of female very short, about  $\frac{1}{2}$  as long as the 5th; ovipositor depressed, rather short, the basal joint being wider than long and about as long as the two preceding joints together, furnished with a very few bristles at the tip; genitalia very small.

Wings blackish, with numerous small hyaline spots. Moderately broad, without distinct costal spine; stigma rather broad and short, distinctly shorter than the second costal cell; anal cell much longer than M, drawn out into a very long and narrow pointed lower angle;  $r_{2+3}$  and  $r_{4+5}$  straight, the latter distinctly bristled on the upper side, but on the under side very few at the base; m more or less waved; r-m just after the middle of  $IM_2$ , perpendicular; m-cu rather long but perpendicular, more than twice as long as r-m.

Legs rather narrow, moderate in length; front femora distinctly bristly; middle tibiae with a single spur; hind tibiae not bristled, but hind femora with 2 or 3 bristles near the tip.

Chaetotaxy complete, rather strong: Ocellar bristles strong but not longer than the fronto-orbital, the latter 2:2; inner vertical longer than the outer pair; postvertical well-developed; genal rather weak; bristles of occipital row strong but short; dorso-central a little nearer to the scutellum than to the suture, or a little behind the line connecting the anterior supra-alar bristles; propleural wanting; notopleural 2; mesopleural 3; sterno- and pteropleural moderately strong; scutellar 6, the intermediate pair being distinctly shorter than others.

Only one species from Formosa.

110. *Hexacinia palpata*, HENDEL.

Ann. Mus. Nat. Hung. XIII., p. 459, pl. IX, fig. 19 (1915).

♂ ♀. Yellowish brown species, of small-sized. Frons yellow, palened toward the sides, yellowish pubescent, with two brown longitudinal streaks, which are extending from a little behind the lunula to near the blackish ocellar dot and are more or less divergent toward the vertex; lunula whitish yellow; vertex pale yellow, with the vertical calli paler; face whitish yellow, somewhat brownish toward the straight upper mouth-edge, at the both ends of the latter there is an ill-defined brown dot; back of the head yellow, slightly palened below, sparsely brownish pubescent, on the upper portion there is a pair of very large subtriangular blackish patches, which are not extending the eye-margin, but their exterior upper corner is reaching to the upper angle of eye and their lower corner to the middle of eye-margin; cheeks yellow, with a proportionally large ill-defined blackish brown spot at just below the lower angle of eye, the bristles of vibrissal edge being long and black. Antennae pale orange-yellow, with two basal joints more or less brownish, especially of the basal one; 3rd joint distinctly microscopically pubescent; arista black, with the basal fifth pale yellow, black pubescent; middle bristle of second joint distinct, but shorter than the joint. Palpi orange-yellow, but the basal joint more or less brownish, the bristles being short and black. Proboscis reddish yellow to reddish brown, palened toward the base.

Mesonotum pale reddish brown to yellowish brown, yellowish pubescent, with 4 longitudinal blackish streaks, which are interrupted at the suture, the middle pair being reached a little behind the middle of the postsutural disc, and the lateral pair being narrower and shorter than the middle one, placed along the interior margin of humeral callus; along the hind margin there are two pairs of blackish spots, the middle two of which are crescent-shaped and are placed very near from each other at their front ends, while the lateral pair is narrow and shorter than the median one and is placed at the lateral junctions of scutellum. Pleurae pale dirty yellow, with a distinct blackish streak along the noto-

pleural suture, throughout to the front base of wing, a very short blackish streak from the hind base of wing to below the scutellar junction rather indistinct; scutellum paler than mesonotum, with two indistinct dark brown basal spots; postscutellum with two pairs of short blackish streaks, the median pair of which is broad, placed on mesophragma, and the lateral pair on hypopleuron is strongly curved inwards.

Abdomen pale orange-yellow, darkened apically, yellowish pubescent on the two basal tergites, but the remainings blackish pubescent; 3rd to the end tergite with 6 ill-defined blackish dots, the intermediate pair very often being obsolete and those on the last tergite very irregular; basal joint of ovipositor pale reddish yellow to brown; male-genitalia pale yellow.

Wings blackish brown, with numerous small hyaline indentations and dots as follows: Triangular one in the first costal cell; two triangular ones in the second costal cell; very small rounded one in the stigma; three triangular ones at the mouth of  $R_1$ ; two in  $R_s$ , one in  $R_5$ , three in  $IIM_2$ , two in  $Cu$  and three in  $Ax$ , they are all rounded marginal indentations; many (over 26) small rounded dots all over the surface. Halteres light yellow; squamulae greyish, with blackish fringes.

Legs light yellow, yellowish pubescent and brownish bristled.

All the bristles black.

Length: Body 4-5 mm; wings 4.5-6 mm.

Hab. Formosa - Shu-Shu (I-III); Hosan (VIII); Funkiko (IV);  
Jujiro (IV); Rantaisan (II, III); Kappansan (III).

Types in the National Museum of Hungary, Budapest.

#### XLVIII. Genus *SOPHIRA*, WALKER.

Trans. Ent. Soc. (2) IV., p. 230 (1857).

*Tritaeniopteron*, DE MEIJERE, Tijdsch. v. Ent. LVII., p. 209 (1914).

The genus is very striking one, all the bristles being yellow and the wings having three very oblique bands.

Genotype—*Sophira venusta*, WALKER.

Head wider than high or narrower than thorax, a little shorter

than half the width; frons broader than eye, slightly but distinctly broadened forwards, flat, when seen from side rounded, lunula narrow; vertex carinate; face broad, distinctly widened beneath, slightly convex but above the upper mouth-edge concave, the antennal grooves being broad and distinct, and the eye-margins being not very narrow and distinctly broadened beneath; back of the head rather flattened; cheeks about  $\frac{1}{4}$  as high as eye, with the broad but shallow genal groove; vibrissal-edge more or less bristled. Eyes about as wide as half the length, the posterior margin rather conspicuously, but less than the anterior margin, curved outwards, with the lower angle more or less pointed. Antennae reaching to just below the middle of face, inserted at the middle of the eyes; third joint rather narrow, about twice as long as wide but less than double the 2nd joint; arista plumose, the under rays being about half as long as the upper ones. Palpi long, distinctly narrowed towards the apex where it is very narrowly rounded, very slightly curved upwards; proboscis moderate in size.

Mesonotum subquadrate, a little longer than wide, moderately convex above; scutellum rather large, about as long as two-thirds the width, subtriangular, flattened above.

Abdomen a little shorter than thorax, not very broad, bristly at the tip and lateral margins; 5th tergite of male about as long as the 4th; 6th tergite of female very short, about  $\frac{1}{4}$  as long as the preceding one; ovipositor rather long, its basal joint depressed and a little broader than long, or about as long as the two preceding tergites together; genitalia with two very long appendages, which are hooked at the tip.

Wings rather short, with two very short costal spines; stigma narrow and pointed, distinctly shorter than the second costal cell; anal cell very broad, as long as the 2nd basal cell, drawn out into a short pointed lower angle;  $IM_2$  conspicuously widened apically;  $r_{2+3}$  straight;  $r_{4+5}$  very slightly curved at the apical part, distinctly but sparsely bristled only on the upper side; r-m at the middle of  $IM_2$ , slightly oblique; m-cu rather long, nearly parallel with r-m.

Legs rather robust; front femora conspicuously bristled; middle

tibiae with two spurs; hind tibiae with a row of bristles on the outer side; hind femora with 2 or 3 long bristles near the tip.

Chaetotaxy complete, all the bristles being yellow: Ocellar rudiment; fronto-orbital 2:2 or accidentally 2:3; inner vertical much longer than the outer pair; postvertical rather weak, not far apart from each other; genal not very strong; bristles of occipital row well-developed, but sparse; dorso-central nearer to the scutellum than to the suture, distinctly behind the anterior supra-alar bristles; notopleural 2; mesopleural 2; sterno- and ptero-pleural strong; propleural wanting; scutellar 6, the intermediate weaker than others.

Only one species from Formosa.

111. *Sophira excellens*, HENDEL.

Ann. Mus. Nat. Hung. XIII., p. 441, pl. IX, fig. 14 (1915).

♂ ♀. Light yellow to pale reddish yellow species, of medium-sized. Frons orange-yellow, palened toward the sides, very sparsely yellowish pubescent; lunula more or less whitish; vertex pale yellowish, with a very small blackish ocellar dot, and with the vertical calli light yellowish; face strongly shining, light yellowish, with the eye-margins pale orange-yellow; back of the head light yellowish, yellowish pubescent, with the less distinct lateral swellings whitish yellow; cheeks orange-yellowish, along the vibrissal edge there are rather numerous yellowish bristle-like hairs. Antennae whitish yellow, with two basal joints light yellowish; 3rd joint gradually narrowed toward the rather narrowly rounded apex, distinctly covered with a microscopical yellowish pubescence, its upper side being more or less concave; arista brown, with the basal third pale yellow, brown plumose; second joint yellowish bristly, without distinct median seta. Palpi pale yellow, brownish bristly; proboscis yellowish brown.

Mesonotum shining, light yellow to pale reddish yellow, yellow pubescent, with one pair of blackish brown spots and of similarly coloured streaks, the former being placed on between the humeral callus and the suture and the latter straightly behind the spot in the

postsutural disc. Pleurae somewhat orange-yellowish, with a large somewhat oblong blackish brown spot in the middle of mesopleuron, and with an indistinct very small blackish dot at just behind the wing-base. Scutellum somewhat paler than mesonotum; mesophragma almost always pale reddish yellow, with two distinct blackish brown lateral spots, the latter being often very faint.

Abdomen orange-yellow, more or less brownish toward the end, yellow pubescent and bristled, with a pair of rounded black lateral spots on each the 3rd to 5th tergites in the both sexes, these spots on the 3rd tergite being rarely obsolete; basal joint of ovipositor light yellow; genitalia dirty yellow.

Wings hyaline, with the veins yellowish and with the stigma yellow; three blackish brown bands as follows: First band, from the base of stigma to the end of anal cell, straight and narrowest in the three bands, and gradually broadened posteriorly; second, from the tip of  $R_1$  to the middle of  $IM_2$ , over r-m, very slightly curved and gradually narrowed posteriorly, shortest; 3rd, from the wing-tip to the tip of Cu, over m-cu, longest and broadest, occupied the wing-tip but leaving the entire mouth of  $IIM_2$ . Halteres dark brown; squamae pale yellowish.

Legs yellow, somewhat brownish, yellow pubescent and bristled.

All the bristles yellowish.

Length: Body 6–6.5 mm; wings 6.5–6.8 mm.

Hab. Formosa—Koshun (IV); Kankau (IV).

Types in the National Museum of Hungary, Budapest.

#### XLIX. Genus *PTILONA*, v. d. WULP.

Tijdschr. v. Entom. XXIII., p. 44 (1880).

Genotype—*Ptilona brevicornis*, v. d. WULP.

Head not broader than high, or a little narrower than thorax, about half as long as wide; frons distinctly narrower than eye, broadened forwards, convex but the area between the vertical calli



strongly hollowed; lunula moderately broad; vertex distinctly carinate, with the very long and narrow vertical calli, the latter are  $\frac{2}{3}$  as long as frons; ocellar triangle long, placed on far before the occipital margin; face very slightly concave, rather narrow, strongly widened beneath, with the very narrow antennal grooves which are not reaching the mouth-edge; eye-margins very narrow, but conspicuously broadened below; back of the head conspicuously concave on the upper area, but on the lower half rather strongly swollen; cheeks narrow, with the genal groove very indistinct, and with the vibrissal edge more or less shortly bristled. Eyes oblong, narrowed below; posterior margin straight; anterior margin moderately curved outwards. Antennae inserted in or at just below the middle of eyes, very short, not reaching to the middle of face; 3rd joint smaller than the second but about as long as the latter, a little longer than wide, more or less angulate or rounded at the tip; arista conspicuously plumose, the rays on the upper side being distinctly longer than those on the under side; second joint globular. Palpi rather long, moderately curved upwards, bristly; proboscis large.

Mesonotum oval, more or less flattened above; scutellum sub-triangular, conspicuously flattened above.

Abdomen flat, about as long as thorax, narrowed at the base, the posterior margin of each the tergites more or less bristly; 5th tergite of male a little shorter than the two preceding ones together; 6th of female less than half the 5th; ovipositor flattened, its basal joint being about as long as two preceding tergites together and a little broader than long; genitalia larger than hypopygium which is very small.

Wings rather long, with a long single costal spine and with straight veins; stigma narrow, shorter than the second costal cell; anal cell as long as or a little longer than the 2nd basal cell, drawn out into a rather short pointed lower angle;  $r_{4+5}$  parallel with  $m$ , bristly on the both sides, but the bristles are very short;  $r-m$  after the middle of  $IM_2$  perpendicular;  $m-cu$  short and perpendicular.

Legs moderate in length; front femora with a row of very few

but rather long bristles; middle tibiae with a single spur; hind femora with a row of short bristles on the outer margin.

Chaetotaxy nearly complete, without praesutural, dorsocentral and ocellar bristles; vertical 2, the outer pair very short as postvertical pair; fronto-orbital 1:1, very strong, very far apart from each other, the inferior one standing just below the middle of frons; genal strong; bristles of occipital row moderately strong; praescutellar far apart from each other; mesopleural 1 or 2, if there are two the lower one almost always very weak; pteropleural weak; scutellar 4.

Only two species from Formosa, differing as in follows:

1. The 2nd tergite yellow, with a very small black lateral spot, the 3rd being black; IM<sub>2</sub> with a small hyaline spot near the tip; Cu with only two hyaline spots; IIM<sub>2</sub> with a large triangular indentation.....*nigriventris*, BEZZI.
11. The 2nd and 3rd tergites yellow, the both with a black transverse lateral spot; IM<sub>2</sub> with a hyaline narrow transverse stripe or two connected spots near the tip; indentation in IIM<sub>2</sub> very narrow; Cu with 3 spots near the tip. ....*persimilis*, HENDEL.

## 112. *Ptilona nigriventris*, BEZZI.

Memoirs of the Ind. Mus. III., no. 3, p. 110, pl. VIII, fig. 20 (1913).

♂ ♀. Greyish species, of medium-sized, with blackish wings which are distinctly whitish at the basal third and possess a few whitish indentations and dots. Frons pale greyish yellow, with a large ill-defined rounded orange-yellow spot at just after the lunula, in where there are many erect blackish hairs, and with the lateral borders distinctly whitish yellow tomentose, on the indistinct frontal calli there is a row of blackish pubescence; lunula whitish; vertex paler than frons, more or less shining, with the vertical calli strongly shining, and with a small oblong blackish ocellar dot; face pale reddish brown, distinctly palened above, with the eye-margins conspicuously white tomentose, and with the edge between the antennal groove and eye-margin strongly shining reddish yellow; back of the head whitish yellow, more or less becoming greyish above, very sparsely blackish pubescent on the lower half; cheeks whitish yellow to orange-yellow

with a very ill-defined small brownish spot at just below the lower angle of eye, along the vibrissal edge there is a row of many short black bristle-like hairs. Antennae orange-yellow, with the 3rd joint more or less reddish brown; second joint with numerous short black bristle-like hairs on the interior surface, but the median seta very short; 3rd joint more or less angulate at the tip; arista black, with the base pale yellowish brown, black-plumose. Palpi orange-yellow; on the interior side there are many black bristles, but on the exterior side rather few black hairs; proboscis yellowish brown.

Mesonotum greyish brown, more or less reddish toward the front, black pubescent, when seen from behind there is a large quadrate grey patch at the posterior half the postsutural disc and is a fine similar coloured median stripe from this patch to the anterior margin of mesonotum; humeral calli and notopleurae greyish white; pleurae dark reddish brown to blackish brown, not evenly but irregularly; scutellum greyish yellow to dark grey; metanotum shining black.

Abdomen black, with two basal tergites yellowish but the basal tergite very often brownish, greyish tomentose and black pubescent; ovipositor black, with two apical joints yellowish; genitalia brown, with yellowish appendages.

Wings nearly black, with the basal third whitish; whitish indentations and dots as follows: Two costal indentations extending posteriorly to  $r_{4+5}$ , the first one of which is placed at the base of stigma, and the second in  $R_1$ , touching with the tip of stigma, and a little longer than the first indentation; at the base of wing, from the base to  $m$ , there is a large dark triangular spot, some one therefore could describe as the wing has three costal indentations; one hind marginal indentation in  $IIM_2$  at the tip of  $cu$ . Four dots smaller than indentation; smallest one in  $R_s$ , just above  $m-cu$ ; oval one in  $IM_s$ , near the apical margin; largest two in  $Cu$ , nearly united from each other, placed near the tip of  $an$ . Halteres and squamulae very pale yellowish, the latter being more or less greyish fringed.

Legs yellowish brown to dark brown, with the joints pale, black pubescent and bristled.

All the bristles black.

Length: Body 6-7 mm; wings 6.5 mm.

Hab. Formosa—Horisha (III); Shinchiku (VII); Kagi (X); Takezaki (V); Hozan (V); Shonoryo (III).

India—Assam; Sylhet (VI).

Philippines.

Types in the Indian Museum, Calcutta, India.

This species is probably synonym of WALKER'S *Rioxa confinis*.

I have captured many specimens on the stem of several kinds of Bambusa which were lived or died, in Formosa. BEZZI has noted that *brevicornis* v. d. WULP found in Formosa, in his Philippine Diptera (Phil. Journ. Science, VIII, Sec. D. 1913), I have, however, found no valid one in very numerous specimens belonging to the genus *Ptilona*.

### 113. *Ptilona persimilis*, HENDEL.

Ann. Mus. Nat. Hung. XIII. p. 446 (1915).

Distinguished mainly from the preceding species by the wing-pattern and by colouring of body, as well as by small size.

♂ ♀. Frons greyish yellow to dark grey, with an ill-defined large brown to blackish crescent patch along the lunula, the pubescence and tomentum being as in *nigriventris*; lunula greyish white or greyish yellow; vertex shining, grey, more distinctly carinate than in *nigriventris*, with a small oblong blackish ocellar dot; face brown to blackish brown, becoming paler upwards, with an indistinct transversal sulcus in the middle, the sulcus being distinctly below the middle in *nigriventris*; eye-margins of face darker than in *nigriventris*, and their interior edge also darker; back of the head orange-yellow to yellowish brown, a little paler above, with a few blackish pubescence on the lower half; cheeks pale reddish brown to blackish brown, becoming yellowish hindwards; bristle-like hairs of vibrissal edge as in *nigriventris*. Antennae dirty orange-yellow, with two basal joints more or less

darkened; 3rd joint rounded at tip; arista blackish, with the extreme base light yellow, with blackish rays of plumosity; second joint with a rather long median seta. Palpi and proboscis as in *nigriventris*, but always distinctly darker.

Mesonotum pale greyish yellow to dark grey, black pubescent, with a large triangular blackish patch along the interior margin of humeral callus, and with a pair of very indistinct brownish median spots, the latter being very often obsolete; humeral calli shining yellowish; notopleural callus irregularly darkened; pleurae blackish brown, with the propleuron and sternopleuron yellowish or reddish; metanotum entirely shining black; scutellum somewhat paler than mesonotum.

Abdomen orange-yellow, with two (♂) or three (♀) apical tergites blackish, becoming black posteriorly; each three basal tergites with a pair of blackish lateral spots, one on the 3rd tergite of which is transverse and is rarely forming a band, occupying nearly entire tergite left only narrow yellowish marginal bands; basal joint of ovipositor brown to black; genitalia blackish, with the appendages brownish.

Wings as in *nigriventris*, but all the indentations narrow and curved, their exterior margin being concave; IM<sub>2</sub> with a transverse band composing of two spots; Cu with three spots, the smallest rounded one of which is placed at just front the tip of an, the largest oblique one near the middle of cu, and the narrow transverse one along the anterior half the mouth of Cu. Halteres and squamulae greyish white, the former with a brown spot at the base of knob.

Legs brown to blackish brown, with tarsi, trochanters, coxae, and the both ends of femora and tibiae, yellowish.

All the bristles black; mesopleural bristle always only one.

Length: Body 4.5–5 mm; wings 5.7–6 mm.

Hab. Formosa—Taihorin (VII, VIII); Horisha (III); Tabani (III); Kagi (X); Takezaki (V); Koshun (I); Kanshirei (X); Jyujiro (VI); Taichu (XII).

Types in the National Museum of Hungary, Budapest. This species is almost always captured with *nigriventris* in the same places.

L. Genus **EUPHRANTA**, LOEW.

Europ. Bohrf., p. 28 (1862).

*Dictya* (p.p.), FABRICIUS, Syst. Antl., p. 326 (1805).*Mosina*, RONDANI, Prodr. VII., p. 180 (1871).*Cephalia* (p.p.), BIGOT, Ann. Soc. Entom. Fr., VI (6), p. 384 (1886).

This genus is almost always found in the oriental region, only one species being in Europe. Distinguished by the narrow body and by the banded wings.

Genotype—*Musca connexa*, FABRICIUS.

Head rather long distinctly broader than high, wider than or as wide as thorax; frons flat, more or less concave, wider than or as wide as eye, slightly broadened forwards; lunula medium-sized, rather linear; vertex more or less carinate, with the flat vertical calli, which are less than half the length of frons; face broad, concave, with the broad antennal grooves and the very narrow eye-margins; back of the head swollen; cheeks rather broad, but in our species rather narrow, with the indistinct genal groove; vibrissal edge not hairy nor bristly. Eyes oval, the posterior margin being distinctly curved outwards and the anterior margin strongly or sometimes obtusely rounded, narrowed beneath. Antennae inserted at the middle of eyes, shorter than the face; third joint 2-3 times as long as wide, with the upper margin slightly concave and the tip rather rounded; arista plumose. Palpi moderate in length, slightly curved above, more or less bristly; proboscis medium-sized.

Mesonotum narrow and long, longer than or  $1\frac{1}{2}$  times as long as wide, convex above; scutellum small, comparatively long, flattened above.

Abdomen narrow and long, longer than thorax, bristly at the tip; 5th tergite of male as long as or shorter than the two preceding tergites together; 6th of female distinctly shorter than the 5th, excepting in *mikado*; ovipositor long, conical or flat, its basal joint being shorter or longer than or as long as three preceding tergites together; male-genitalia not prominent.

Wings narrow, with a very short costal spine and straight veins; stigma pointed, about half as long as or a little shorter than the second costal cell; anal cell a little shorter than the 2nd basal cell, drawn out into a very short pointed lower angle;  $r_{4+5}$  at the base of the both sides bristly, sometimes very sparsely bristly beyond r-m, parallel with m, the latter often at the base of apical portion more or less curved; r-m perpendicular, after the middle of  $IM_2$  (in *lemniscata*, ENDERLEIN, in the middle of  $IM_2$ ); m-cu perpendicular, short.

Legs long; front femora bristly; middle tibiae with one very long apical spur; hind tibiae with a row of bristles on the outer margin.

Chaetotaxy nearly complete; ocellar bristles almost always wanting; fronto-orbital 1:3 or 1:2, the upper one of inferior being placed very near to the superior fronto-orbital one; vertical 2, strong, the inner pair being a little longer; post-vertical short; genal rather weak; praesutural wanting; dorso-central wanting or present, when present they are weak and are placed distinctly behind the line connecting the anterior supra-alar bristles; mesopleural 1 or 2; ptero- and sternopleural 1, strong; scutellar 4, all the same in length; notopleural 2; propleural wanting, but there are rather thick hairs.

#### Key to the Japanese Species.

1. Pterostigma nearly as long as the second costal cell.
2. Wings with straight or curved transverse bands.
  3. Wings with 4 black bands, the basal two on the costa being united together.
    4. Middle isolate band distinctly curved inwards; apical band very broad, about 4 times as broad as the middle one..... *sex-signata*, HENDEL.
    44. Middle isolate band straight; apical band about twice as broad as the middle one. .... *mikado*, MATSUMURA.
  33. Wings with 3 yellowish isolate bands, the apical one forming an apical spot and about three times as broad as the others. .... *chrysopila*, HENDEL.
  22. Wings with 4 irregular blackish transverse bands; two middle ones distinctly interrupted..... *jucunda*, HENDEL.
11. Pterostigma as long as half the second costal cell.
  2. Wings with 3 isolate blackish bands, the apical one being very broad..... *apicalis*, HENDEL.

22. Wings with 4 blackish bands, which are connected with each other into zigzag-shape. .... *lemniscata*, ENDERLEIN.

114. *Euphranta sex-signata*, HENDEL.

Ann. Mus. Nat. Hung. XIII., p. 439, pl. VIII, fig. 2 (1915).

♂ ♀. Dark greyish species, of medium-sized. Frons greyish yellow, with a long brownish median spot which extends forward the upper margin of lunula, very sparsely covered with a few very fine brown pubescence; lunula whitish yellow, with the distinct blackish margins; vertex light yellow, distinctly but very sparsely pubescent, with a blackish ocellar triangle and with the strongly shining paler coloured vertical calli; face dark brown, with the yellowish antennal grooves, and with the pale reddish yellow eye-margins, the latter is castaneous-margined interiorly, at just below the middle there is a distinct transverse sulcus, the both ends of which are strongly curved below; back of the head dark castaneous, leaving the narrow yellowish inferior eye-margin and the lower mouth-edge, black pubescent; cheeks orange-yellow, with the very fine eye-margin and the vibrissal edge dark brown, the latter being furnished with many but very short black bristle-like hairs. Antennae dark brown, hardly reaching the upper mouth-edge; 3rd joint about as long as  $2\frac{1}{2}$  times the width or the second joint, gradually narrowed toward the rounded apex; arista black, with the base yellowish brown or brown, the black rays of plumosity being the same length in the both sides; median seta of second joint prominent, black. Palpi dark brown; proboscis brown.

Mesonotum black, gradually palened behind, densely covered with a golden yellow pubescence, with a large quadrate grey median patch on the posterior half the postsutural disc, when seen from behind there is a very broad grey tomentose median streak which occupies the interrupted space of the suture and extends from the anterior margin to the grey median patch; humeral and notopleural calli orange-yellow to reddish yellow in mostly part; scutellum greyish yellow; pleurae and metanotum dark castaneous, rarely yellowish at the posterior border of mesopleuron.



Abdomen dark castaneous to black, with a narrow yellow-tomentose median band along the posterior margin of each the 2nd to 4th tergites, these bands being very often obsolete in the male, grey tomentose and mainly black pubescent, with black bristles; basal joint of ovipositor about as long as  $1\frac{1}{2}$  times the width, depressed, black and black bristly; genitalia yellowish; hypopygium blackish.

Wings clearly hyaline, with three bands and one apical patch blackish brown; apical patch not reaching the wing-tip, the interior margin being convex and extending from far before the tip of  $R_1$  to the middle of the mouth of  $IIM_2$ , and the exterior margin straight from a little before the tip of  $R_5$  to the end of  $m$ ; basal band, from the base of stigma to the inferior angle of anal cell, straight but more or less irregularly defined; median band, from the stigma to the middle of the mouth of  $Cu$ , broadest and straight over  $r-m$ , slightly narrowed posteriorly and united with the basal band in the stigma; 3rd or subapical band, from the middle of the mouth of  $R_1$  to the inferior corner of  $IIM_2$ , over  $m-cu$ , narrowest and slightly concave, being the same in width throughout the whole length; real tip of  $R_1$  with a very minute hyaline dot. Stigma a little shorter than the second costal cell;  $IM_2$  distinctly pointed at the posterior angle;  $r-m$  and  $m-cu$  straight, and parallel with each other;  $r_{4+5}$  distinctly bristly beyond  $r-m$ . Halteres and squamulae light yellow.

Legs blackish brown, more or less palened toward the tarsal end, black pubescent and bristled; front femora with a row of bristles on the upper side; middle tibiae with one long spur.

All the bristles black; ocellar bristle wanting; fronto-orbital 1:3, two lower inferior ones standing very near from each other and being distinctly shorter than the upper inferior one; dorsocentral present; mesopleural two, but the inferior one is very weak and hair-like.

Length: Body 6-6.5 mm; wings 6-6.5 mm.

Hab. Formosa—Shinchiku (VII); Toyenmongai.

Type of male in the National Museum of Hungary, Budapest; of female in the Entomological Museum of Government Research Institute, Taihoku, Formosa.

115. *Euphranta mikado*, MATSUMURA.

Thous. Ins. Jap. Add., II., p. 414, pl. XXIII, fig. 11 (*Trypeta*) (1916).

Closely allied to the preceding species, but easily distinguished by the shape of wing-bands, and by the colouration of body. Greyish yellow species, of large-sized.

♂ ♀. Frons orange-yellow, becoming paler toward the vertex, with a very faint brownish spot near the lunula, nearly as wide as eye, covered with rather numerous blackish pubescence nearly all over the surface; lunula distinctly whitish, with a very fine brownish upper margin; vertex somewhat greyish, distinctly shining, with a very small blackish ocellar dot, and with the very short and broad vertical calli, which are very strongly shining; face light whitish yellow, with a brown band along the upper mouth-edge, with the eye-margins orange-yellow, the median sulcus being less distinct than in *sex-signata* but strongly curved; cheeks orange-yellow, with a very fine indistinct brown streak of vibrissal edge, the latter furnished with a very few very short black bristle-like hairs. Antennae reddish yellow; 3rd joint distinctly narrowed toward the tip, at where it is more or less pointed in the female, the both sides being nearly straight; arista black, with the base light yellow, the hairs being black; median seta of second joint long and black. Palpi pale yellowish brown, rather strongly curved upwards; proboscis yellowish brown to reddish brown.

Mesonotum proportionally short, reddish yellow, dusted with a grey tomentum and black pubescent, with two broad blackish streaks which are hardly interrupted at the suture, and the exterior margin of which is strongly sinuated along the suture; scutellum yellowish, rather flat, triangular; humeral and notopleural callosities shining, light yellow to pale reddish yellow; pleurae and postscutellum dark castaneous, with the propleuron, a transverse band along the posterior margin of the mesopleuron and an irregular spot along the exterior margin of the postscutellum yellowish.

Abdomen orange-yellow, black pubescent and bristled, with a very broad black lateral streak on the dorsum; basal joint of ovipositor

black, black pubescent and bristled, conical and a little longer than the 3 preceding tergites together; 6th tergite of female longer than the 5th; genitalia yellowish; hypopygium blackish.

Wings clearly hyaline, with four straight dark brown bands; first band extending from the base of stigma to the posterior end of anal cell; second one, from the tip of stigma to the middle of the mouth of Cu, right over r-m, connected with the first band in the dark brown stigma which is a little shorter than the second costal cell; 3rd band extending from the middle of the mouth of  $R_1$  to the end of cu, straightly over m-cu, very slightly convex; fourth or apical band very broad and about twice as wide as the three preceding bands which are the same in width, the interior margin being parallel with the 3rd band and extending from a little before the tip of  $R_1$  to a little posterior the middle of the mouth of  $IIM_2$ , and the exterior margin slightly concave, extending from the end of  $r_{4+5}$  to the end of m; in one specimen from Nishigahara (Tokyo) the apical band being connected with the 3rd at just front the posterior margin. Vein  $r_{4+5}$  distinctly bristly far beyond r-m; m-cu parallel with r-m, the posterior angle of  $IM_2$  being strongly pointed; r-m a little beyond the middle of  $IM_2$ .

Legs yellow, with tibiae and tarsi more or less tinged with brown colour, black pubescent and bristled; front femora bristled as in the preceding species.

Length: Body 8-9 mm; wings 7.5-8.8 mm.

Hab. Japan—Sapporo (VII); Nagano (Nakafusa VII); Nishigahara (VII).

Type of female in the Entomological Museum of the Hokkaido Imperial University, Sapporo, Japan; of male in the Entomological Museum of Government Research Institute, Taihoku, Formosa.

116. *Euphranta chrysopila*, HENDEL.

Ent. Mitteil., II., pp. 37-38, fig. 1 (1913)

Dark coloured species, of small-sized; easily distinguished by three convex, nearly parallel bands of wings.

♂ ♀. Frons reddish yellow to reddish brown, with a large oblong

brown median spot which is often obsolete, indistinctly pubescent, distinctly narrower than eye; lunula castaneous; vertex orange-yellow, with a dark brown ocellar triangle; face light yellow, with the eye-margins and the upper mouth-edge more or less brownish, the transverse sulcus being distinct but very fine; back of the head orange-yellow, with a pair of very large black patches on the upper portion, furnished with some rather long yellowish bristle-like hairs on the lower portion toward the occipital foramen; cheeks orange-yellow, with a very short oblique very fine brown stripe at just beneath the lower angle of eye, and with a similar but long transverse stripe along the vibrissal edge, the latter furnished with a few very short bristle-like black pubescence. Antennae reddish yellow; 3rd joint about as long as twice the width, becoming very broad toward the base, the upper margin being slightly concave and the under margin strongly convex, dusted with a snow-white tomentum all over the surface and distinctly tinged with brown colour at the apical border; arista black, with the basal joint yellowish, black-plumose; median seta of second joint distinct, black. Palpi yellow, becoming reddish toward the broadly rounded tip; proboscis light yellow.

Thorax as in *mikado*, but differs as follows: Postsutural disc with a large oblong whitish median spot; scutellum similarly whitish, with the dark lateral margins; pleurae and postscutellum dark castaneous, without any distinct spot or band.

Abdomen also as in *mikado*, but the 5th tergite of male with a median yellowish area; basal joint of ovipositor as long as the 3 preceding tergites together, somewhat depressed; 6th tergite of female a little shorter than the 5th; genitalia black, with the rather slender light yellow appendages.

Wings proportionally small, hyaline, becoming yellowish towards the costa, with 3 dark brown bands; first short one, from the middle of stigma to the middle of IM<sub>s</sub>, right over r-m, oblique and convex, narrowest; 2nd band, from a little after the tip of stigma to the end of cu, over m-cu, slightly convex and slightly broadened posteriorly; 3rd or apical one broadest, occupying all the wing-tip, its interior

margin being strongly concave on  $r_{2+3}$  and extending from the middle of the mouth of  $R_1$  to just above the middle of the mouth of  $IIM_2$ . Stigma nearly as long as the second costal cell, yellowish;  $r_{1+2}$  bristly nearly throughout the whole length; m-cu not parallel with r-m, very slightly convex; posterior angle of  $IM_2$  more or less pointed. Halteres and squamulae light yellow, but the former distinctly whitish.

Legs light yellow, with tibiae and tarsi brownish, mainly black pubescent and bristled; front femora with an oblong blackish patch on the both sides, one on the interior side being distinctly paler than the rest.

Length: Body 5.5–7 mm; wings 4.5–5.5 mm.

Hab. Formosa – Kobayashi (IX); Shu-Shu (I); Horisha (V); Kagi (VII-X); Tainan (II); Taihorin (VIII); Fuhosho (IV); Kosempo (III, V); Koshun (VIII, IX); Kan-kau (V, IX); Domon (VII).

This species is mainly collected on the stem of *Bambusa*; type of male in the Entomological Institute of Kaiser Wilhelm Gesellschaft, Berlin-Dahlem; of female in the Entomological Museum of Government Research Institute, Taihoku, Formosa.

### 117. *Euphranta apicalis*, HENDEL.

Ann. Mus. Nat. Hung. XIII., p. 440, pl. VIII, fig. 1 (1915).

♂. Shining yellowish brown species of small-sized, with brown-three-banded hyaline wings; distinguished by very slender body and by very long antennae.

Frons as wide as eye, yellow, with a very large dark castaneous median patch which is often occupying nearly all over the surface leaving a narrow yellow anterior band, bare from pubescence, but along the eye-margins there is a very few very short yellowish pubescence; lunula whitish yellow to light yellow; vertex brown or blackish brown, with a rather large elliptical black ocellar spot, and with the yellowish vertical calli which are proportionally broad; face less concave, without median sulcus, light waxy yellow, with a pair of large quadrate blackish spots along the upper mouth-edge, these spots

being placed on very near from each other and often connected with, with the eye-margins orange-yellow; back of the head orange-yellow, with a pair of irregularly triangular black patches on the upper border, along the posterior margin of eye from the upper corner below to the upper fourth, very sparsely pubescent; cheeks orange-yellow, with a few very short black bristle-like hairs of vibrissal edge. Antennae very long, nearly reaching the upper mouth-edge, orange-yellow but the second joint blackish; 3rd joint about as long as three times the width, gradually narrowed toward the very narrowly rounded tip; arista black, with the base yellow, the rays of plumosity being black; median seta of the second joint distinct. Palpi narrow, pale yellow, becoming whitish toward the upper margin, black bristly; proboscis yellowish.

Mesonotum straw-yellow to reddish yellow, with 3 pairs of dark castaneous longitudinal streaks; median pair of streaks entire, about the same in width throughout, united with the submedian streak at the anterior half the praesutural disc; submedian streaks interrupted at the suture, the front division being very broad along the interior margin of humeral callus, and the hind division narrow but more or less broadened behind; two pairs of streaks, mentioned just above, placed very near from each other only leaving a very fine yellowish submedian stripe; lateral pair of blackish streaks narrow, extending from the interior margin of humeral callus to the wing-base along the upper margin of notopleural callus. Scutellum yellow, with two blackish longitudinal streaks, which are narrowed behind. Pleurae and postscutellum castaneous, with two large yellowish patches on the former, one being placed in the middle and other in the front.

Abdomen reddish yellow to yellowish brown, with a pair of large quadrate blackish brown lateral patches on each tergite leaving the posterior margin, except for the 5th tergite entirely blackish; pubescence and bristles black; genitalia yellowish; hypopygium black.

Wings glass-hyaline, with 3 irregularly defined blackish brown bands; basal band short, from the basal half of stigma to the tip of anal cell; median band slightly concave, extending from before the middle of the mouth of  $R_1$  to the middle of the mouth of  $Cu$  over  $r-m$

narrower than the basal one but the posterior half broader; apical band very broad, occupying the apical third of wing left the tip, with the interior margin slightly convex and in  $R_2$  triangularly sinuate, and with the exterior margin concave and extending from before the end of  $r_{4+5}$  to the end of  $m$ ; one very small triangular spot at the tip of  $R_1$  and two small rounded spots along the mouth of IIM, distinctly hyaline. Stigma about half as long as the second costal cell; anal cell as long as the second basal cell;  $r_{4+5}$  very sparsely bristled from the base to just beyond  $r-m$ ;  $r-m$  and  $m-cu$  perpendicular, nearly straight, parallel with each other; IM, with the more or less pointed posterior angle. Halteres and squamulae whitish yellow.

Legs yellow, with tibiae and tarsi somewhat brownish, black pubescent and bristled.

All the bristles black; ocellar wanting; dorsocentral behind the middle of postsutural disc; mesopleural one.

Length: Body 5.5–7 mm; wings 5.5–6 mm.

Hab. Formosa—Tabani (III); Tainan (III); Chikutokaku (XI);  
Banshoryo (VI); Karenko (in plain XII).

Type in the National Museum of Hungary, Budapest. Female is not found yet. Reared from the stem of *Aeginetia indica* L. at Karenko.

# 118. *Euphranta jucunda*, HENDEL.

Ann. Mus. Nat. Hung. XIII, p. 439 (1915).

Rather greyish species of medium-sized; easily distinguished by irregularly banded wings.

♀. Frons narrower than eye, distinctly concave above; pale brownish, becoming yellowish forwards, with an ill-defined narrow yellowish median stripe on the upper border, very sparsely brown-pubescent; lunula somewhat whitish; vertex somewhat waxy, with a very small blackish ocellar dot, and with the broad strongly shining light waxy yellow vertical calli; face greyish, with the eye-margins orange yellow, on the upper mouth-edge with a brown band which is extending toward the cheeks along the vibrissal edge, the transversal

sulcus being indistinct, and the interior margin of the antennal grooves carinate; back of the head yellow, with one pair of blackish brown longitudinal spots which are narrowed and extended below but never touching the eye-margin, sparsely pubescent beneath; cheeks rather linear, orange-yellow, with a distinct genal groove, with a very few very short bristle-like pubescence along the black vibrissal edge. Antennae reddish brown; 3rd joint a little longer than twice the width, with the upper margin very slightly concave and the under margin strongly convex, its tip being narrowly rounded; arista black, with the base brownish, the hairs being black and short; median seta of second joint short. Palpi yellow, broad, narrowed toward the base, very sparsely black-bristly; proboscis yellowish brown.

Mesonotum blackish brown, greyish tomentose and black pubescent, when seen from behind there are three greyish yellow longitudinal streaks, the median one of which is narrow, extending from the anterior margin to the posterior margin, and the submedian pair is very fine; on the extreme side there is a broad yellowish streaks on postsutural disc; humeral and notopleural callosities yellow; pleurae and postscutellum dark castaneous, with all the sutures more or less reddish yellow; scutellum yellow, with the basal corners more or less brownish.

Abdomen black, greyish tomentose, with a broad yellow median streak from the first tergite to the end of fourth tergite, which is so strongly broadened forwards that the first tergite is nearly entirely yellowish; 2nd tergite with numerous long yellowish hairs, while the remainings are covered with a very short depressed blackish pubescence; 6th tergite about half as long as the preceding one; basal joint of ovipositor depressed, nearly as long as the 3 preceding tergites together.

Wings rather large, glass-hyaline, with 4 irregular blackish bands; basal band, from the stigma to the end of anal cell, composing of three spots, the anterior triangular one of which is very large, extending posteriorly to  $r_{4+5}$ , the second one is extending from just behind the tip of second costal cell to the tip of second basal cell, and the smallest third one is along the tip of anal cell, these three spots being very



often connected with each other; second band, from r-m to the middle of the mouth of Cu, broad but acutely pointed at the both ends; 3rd band, from beyond the tip of stigma to the end of cu, over m-cu, broad, very often separated into two spots, the anterior one of the latter is narrow triangular and reaching behind to  $r_{4+5}$ , and the posterior one is very large and pointed anteriorly; 4th or apical one broadest, from the apical third of the mouth of  $R_1$  to the apical half of the mouth of  $IIM_2$ , leaving a narrow hyaline apical spot in  $R_5$ , its exterior margin being concave, and its interior margin very irregular, connecting with the 3rd band by a very broad portion on m, rarely united with the latter nearly entire, excepting in  $IIM_2$ ; at the tip of  $R_1$  there is a very small triangular hyaline spot. Stigma blackish brown, with the extreme tip hyaline, a little shorter than the second costal cell; r-m oblique, just after the middle of  $IM_2$ ; m-cu perpendicular, very slightly convex, the posterior angle of  $IM_2$  being more or less pointed;  $r_{4+5}$  nearly bare from bristles. Halteres very pale orange-yellow, with the tip of the stalk whitish; squamulae greyish white, brown margined.

Legs pale yellow; femora brown or blackish excepting the tip, or rarely entirely yellowish, but on the hind femora there is an ill-defined brownish subapical ring.

All the bristles black; ocellar wanting; fronto-orbital 1:3; mesopleural one.

Length: Body 7.5–8 mm; wings 7.5–8 mm.

Hab. Formosa—Sokutsu (VI); Funkiko (IV).

Type in the National Museum of Hungary, Budapest; male is not found in the present time.

119. *Euphranta lemniscata*, ENDERLEIN.

Zool. Jahrb., Abt. Syst., XXXI., Heft 3, p. 426, fig. G. (*Trypeta*) (1911).

Dark greyish species, of medium-sized; closely allied to the preceding one, but easily distinguished by the wing-pattern and by the coloration of body.

♂. Frons as broad as eye, very slightly concave, orange-yellow but distinctly greyish yellow toward the sides and vertex, covered with many black pubescence and dusted with a greyish tomentum; lunula yellowish; vertex greyish, with a small round black ocellar dot; vertical calli strongly shining waxy greyish yellow, oval, distinctly elevated; face whitish yellow, with two ill-defined large orange-yellow patches between the distinct transverse sulcus and the upper mouth-edge, with the eye-margins more or less yellowish; back of the head light yellow, with one pair of proportionally small somewhat quadrate dark brown patches on the upper portion, these patches being never touched the eye-margin; cheeks yellow, with some very short black bristly hairs along the vibrissal edge. Antennae reddish yellow, somewhat tinged with brown colour toward the tip of 3rd joint; 3rd joint as long as  $2\frac{1}{2}$  times the width, nearly the same in width throughout the whole length, with its upper margin slightly concave and its under margin convex; arista blackish, with the basal  $\frac{1}{6}$  yellowish, with black rays short; second joint covered with many short black bristly hairs on the interno-superior side, but without distinct median seta. Palpi yellow, furnished with a few black bristly hairs, nearly the same in width throughout the straight portion, its basal third being narrow and curved; proboscis pale reddish yellow.

Mesonotum black, densely covered with greyish tomentum and also with short depressed golden yellow pubescence, with a fine yellow median stripe throughout the whole length, which is more or less broadened at the posterior margin, and with a yellowish lateral streak, the latter broadened on the postsutural disc; humeral and notopleural callosities light yellow; pleurae reddish brown, becoming darker hindwards, with a broad light yellow streak along the upper margin, which is broadened posteriorly; scutellum yellow, somewhat brownish toward the base; postscutellum blackish castaneous, with an irregular yellowish patch behind the wing-bases.

Abdomen reddish yellow, with a pair of large quadrate black lateral spots on each the tergites, but those on the 5th tergite united with each other on the posterior half, black pubescent; fifth tergite a

little shorter than the two preceding tergites together, furnished with many very strong black spine-like bristles; genitalia with proportionally long yellow appendages.

Wings glass-hyaline, with 4 blackish bands; basal band, from the stigma to the tip of anal cell, narrowest, slightly concave, irregularly defined; 2nd or median band, from the stigma to the tip of Cu, obliquely straight, passing over r-m, united with the first one in the stigma; 3rd or subapical band, on m-cu, straight anteriorly to the costa, united with the median band at the end of cu; 4th or apical band, from the whole width of the mouth of  $R_5$  to the anterior half the mouth of  $IIM_3$ , broadest and concave, united with the subapical one between  $r_{3+3}$  and m, leaving a very small faint paler dot in the middle of  $R_5$  and also a very small triangular dot at the tip of  $R_1$ ; in the large triangular hyaline space between the 2nd and 3rd bands there is a small blackish spot from the costa to  $r_{4+5}$ . Stigma a little longer than a half the second costal cell, blackish brown, with a small yellowish indentation in the middle;  $r_{4+5}$  provided with a very few bristles from the base to beyond r-m on the upper surface; r-m in the middle of  $IM_3$ , perpendicular, straight; m-cu perpendicular, very slightly convex, the posterior angle of  $IM_2$  being more or less pointed; M proportionally broad, while the anal cell is narrow and shorter than the former. Halteres pale orange-yellow; squamulae whitish.

Legs yellow, somewhat darkened in the tibiae, black pubescent and bristled.

All the bristles black; ocellar bristles rudiment; fronto-orbital 1:3; mesopleural 2, strong; dorso-central nearer to the posterior margin than to the suture.

Length: Body 7 mm; wings 6 mm.

Hab. Formosa—Takao (XII).

Type in the Stettin Museum, Stettin, Germany.

#### LI. Genus **TETRAMYIOLIA**, nov.

Genotype—*sapporensis*, sp. nov.

Very near to the subgenus *Acidiella*, but distinguished by the

broad frons which bears 4 pairs of inferior fronto-orbital bristles, by the 4 ocellar bristles, and by the bare arista.

Head broader than high, as wide as thorax, or a little longer than a half the width; frons distinctly broader than eye, a little narrowed forwards; lunula prominent, semicircular; vertex distinctly carinate, with the narrow distinctly elevated vertical calli, which are shorter than a half the length of frons; face moderate in width, conspicuously widened beneath, rather flat, with rather broad and shallow antennal grooves, with the upper mouth-edge distinctly reflexed, and with the eye-margins rather broad and nearly the same in width throughout the whole length; back of the head gradually swollen below towards the lower margin; cheeks about  $\frac{1}{4}$  as high as eye, with the very broad and flattened genal groove; vibrissal-edge very shortly pubescent. Eyes about twice as long as wide, broadest in the middle, with the posterior margin much less convex than the anterior margin, the upper angle being more or less pointed and the lower angle broadly rounded. Antennae inserted at just below the middle of eyes, not reaching the upper mouth-edge; third joint about as long as twice the width or the second joint, with the upper margin very slightly concave, the tip being obtusely rounded; arista bare. Palpi rather broad, not very long, the apical half being distinctly broader than the rest and very sparsely bristled, with the apex more or less truncate; proboscis moderate in size.

Mesonotum subquadrate, a little longer than wide, with the distinctly rounded anterior lateral angles, moderately convex above; scutellum moderate in size, distinctly rounded at the tip, conspicuously swollen above.

Abdomen oval, much broader than thorax, shorter than the latter, bristly at the posterior margin of each tergite; 5th tergite of male distinctly shorter than the two preceding tergites; genitalia moderate in size, with the short penis.

Wings moderate in size, but distinctly narrowed towards the tip, with two short marginal spines, and with the straight veins; stigma moderately pointed, about  $\frac{2}{3}$  as long as the second costal cell; anal cell

very slightly shorter than the 2nd basal cell, drawn out into a very narrow and long pointed lower angle;  $r_{4+5}$  parallel with  $m$  nearly throughout the whole length, with 3 or 4 indistinct bristles at the base;  $IM_2$  distinctly shorter than  $M$ , narrow, moderately broadened apically;  $r-m$  conspicuously after the middle of  $IM_2$ , perpendicular;  $m-cu$  parallel with  $r-m$ , but very slightly curved outwards.

Legs moderate in length; front femora with a row of a few very long bristles on the under side; middle tibiae with a single spur; hind tibiae with a row of a few but rather long bristles on the outside; hind femora with only two or three weak bristles near the tip.

Chaetotaxy complete; ocellar bristles 4, long and about as long as the superior fronto-orbital pairs, nearly parallel, the inner pair being a little shorter than the outer pair; fronto-orbital 2:4; postvertical rather long, about as long as the ocellar pairs, parallel, rather far apart from each other; inner vertical pair distinctly longer than the outer pair; genal moderate in length; bristles of occipital row rather short and sparse; dorso-central in a little before the middle of postsutural area but on the line connecting the anterior supra-alar bristles; prothorax with a few rather strong bristles; notopleural 2; mesopleural 3, the inferior one being rather weak; sterno- and ptero-pleural moderate in length; scutellar 4, the apical pair a little shorter than the basal pair, distinctly curved inwards, their tips being crossed; all the bristles black.

Only one species from Japan.

120. *Tetramyiolia sapporensis*, sp. nov.

(Fig. 69; Pl. X, fig. 1).

Shining, yellowish or reddish brown species, of rather small-sized, with the wings which are dark brown and have hyaline indentations and spots as those in the genus *Acidiella*.

♂. Frons pale yellowish brown, darkened toward the vertex, distinctly but very sparsely black-pubescent; lunula coloured as in frons, but whitish margined; vertex yellowish brown, with a blackish

ocellar dot and the strongly shining reddish brown vertical calli; face greyish white, with the eye-margins whitish yellow; back of the head reddish yellow, very slightly palened beneath, with a very few black pubescence; cheeks pale orange-yellow, furnished with a few rather long black pubescence surrounding the genal bristle; vibrissal edge with about 10 black bristle-like hairs. Antennae brown, with the 3rd joint orange-yellow; arista black with the basal third yellowish, microscopically pubescent; median seta of second joint black, very long and about as long as the joint. Palpi pale orange-yellow, with the upper margin concave and the upper apex angulate; proboscis brownish.

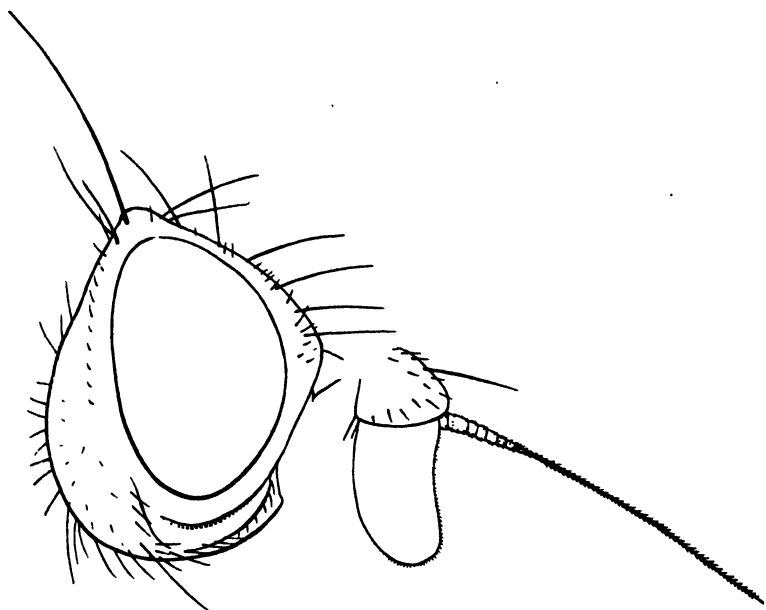


Fig. 69.

*Tetramyiola sapporensis*, sp. nov. ♂,  $\times$  ca 28. Left antenna,  $\times$  ca 48.

Mesonotum pale brown to reddish brown, black-pubescent, with 4 very indistinct blackish longitudinal streaks; humeral and notopleural calli yellowish; pleurae pale reddish yellow, with a few black pubescence in the large middle area; scutellum and postscutellum coloured as in mesonotum.

Abdomen yellowish brown to castaneous, with a pair of large transverse-quadrate blackish patches on each the 3rd to 5th tergites, which on the 5th tergite are always united with each other, black pubescent and bristled; genitalia yellowish; hypopygium black.

Wings blackish brown, with hyaline indentations and spots as follows: Two costal indentations placed very near from each other, just after the tip of stigma, extending from the costa to  $r_{4+5}$ ; three very large irregularly shaped ones, along the posterior margin, the apical one of which is occupying nearly all over  $IIM_2$  and is connecting with a quadrate hyaline spot in the middle of  $R_s$ , the intermediate one, placed at the apex of  $Cu$ , is smallest and is united with a hyaline apical band of  $IM_2$ , and the basal one, occupied the basal third of  $Cu$ , is united with a longitudinal hyaline streak in the basal half  $IM_2$ . Six another spots, of which three are large and quadrate, and are in the costal cells; one round spot in  $R$ ; one very faint spot near the tip of  $r_{2+3}$  in  $R_3$ ; the remaining one near the tip of  $r_{4+5}$  also faint. Axillary lobes entirely hyaline. Halteres greyish brown, with the base yellow; squamulae yellowish white, black-fringed. Legs pale reddish yellow, black pubescent and bristled.

Length: Body 4.5 mm; wings 5.5 mm.

Hab. Japan—Sapporo (V).

Type in the Entomological Museum of Government Research Institute, Taihoku, Formosa; female not found yet.

## LII. Genus OEDASPIS, LOEW.

Europ. Bohrfliegen, p. 46 (1862).

Genotype—*Trypeta multifasciata*, LOEW.

Head wider than high, about as broad as thorax, or about half as long as wide; frons very broad,  $1\frac{1}{2}$ -2 times as wide as eye, slightly broadened forwards; lunula very distinct; vertex more or less carinate with the short and narrow vertical calli; face very broad, rather slightly broadened beneath, with the very broad and shallow antennal grooves,

and also with the broad eye-margins, shorter than frons, slightly concave; back of the head distinctly swollen backwards, but the upper area more or less flattened; cheeks more than one-third the height of eye, with the very narrow genal groove; the vibrissal-edge nearly not bristly. Eyes rather small, elliptical, the posterior margin being less convex. Antennae inserted distinctly below the middle of eyes, broad and short, distinctly shorter than face; basal joints placed apart from each other; 3rd joint about as long as the 2nd, rounded at the tip or more or less angled at the upper tip; arista nearly bare from pubescence. Palpi short, furnished with a few short bristles at the tip; proboscis normal.

Mesonotum about as long as wide, strongly convex above; scutellum rather large, strongly swollen above, black spotted.

Abdomen oval, about as long as or shorter than thorax; 5th tergite of male a little longer than the 4th; 6th tergite of female very little shorter than the 5th; ovipositor rather short, subconical, its basal joint being shorter than or about as long as three preceding tergites together; genitalia small, not prominent.

Wings rather broad, with two very short marginal spines and with more or less wavy longitudinal veins; stigma pointed, shorter than the 2nd costal cell; anal cell about as long as M, drawn out into a very short pointed lower angle;  $IM_2$  more or less pointed at the lower angle;  $r_{4+5}$  indistinctly bristly at the base, parallel with m in the apical part; r-m rather very near to m-cu, straight, slightly oblique or perpendicular; m-cu slightly oblique, almost always curved outwards.

Legs rather robust; front femora long-bristly; middle tibiae with a rather short spur; hind tibiae with a row of short bristles; hind femora with one or two short bristles near the tip.

Chaetotaxy complete; ocellar bristles moderate in length or very strong, divergent; fronto-orbital 2:3-7, the upper one of the superior bristles being often yellowish; the inner vertical pair long, but the outer pair short and yellowish; genal very weak, often yellowish; bristles of occipital row yellowish, almost always rather long and thick, distinctly pointed; prothorax with a row of yellowish bristle-like hairs;



dorsocentral bristles 1 or 2, the anterior one being placed nearly on the line connecting the praesutural bristles and the posterior one nearly on the line connecting the anterior supra-alar bristles; notopleural two; mesopleural 2 or more, when they are more than two the upper two black and the rest short and yellow; sternopleural strong; pteropleural moderate in length, rarely 2; scutellar 4.

#### Key to the Japanese Species.

1. Brownish. Third antennal joint proportionally long, narrowly round at the tip; m-cu nearly straight..... *formosana*, sp. nov.
11. Yellowish. Third antennal joint proportionally short, broadly rounded at the tip; m-cu distinctly convex..... *japonica*, sp. nov.

The both species very closely allied to *chinensis*, BEZZI, but easily distinguished by two dorsocentral bristles.

#### 121. *Oedaspis formosana*, sp. nov.

(Fig. 70; Pl. XI, fig. 2)

Brownish species of small- to medium-sized, belonging the subgenus *Oedaspis*; at once distinguished from *multifasciata*, LOEW, by the coloration of body.

♂ ♀. Frons yellowish brown to reddish brown, more or less darkened hindwards, with a very few black pubescence; lunula greyish white, more or less quadrate; vertex distinctly darker than frons, with a black ocellar triangle and the more or less shining vertical calli; face entirely greyish white to pale reddish yellow; back of the head pale reddish yellow, becoming whitish below, yellowish pubescent; cheeks greyish white to whitish yellow, black and yellowish pubescent, with black hairs of vibrissal edge. Antennae light yellow to pale reddish yellow; 3rd joint a little longer than wide, with the upper margin straight and the lower margin strongly convex, the tip being more or less pointed; arista black, becoming reddish brown toward the base, microscopically pubescent; median seta of second joint distinct. Palpi pale yellow to orange-yellow, black pubescent; proboscis yellowish.

Mesonotum black, becoming yellowish brown toward the sides and

front, covered with numerous stout yellowish pubescence, with the humeral and notopleural calli pale yellowish brown; pleurae greyish

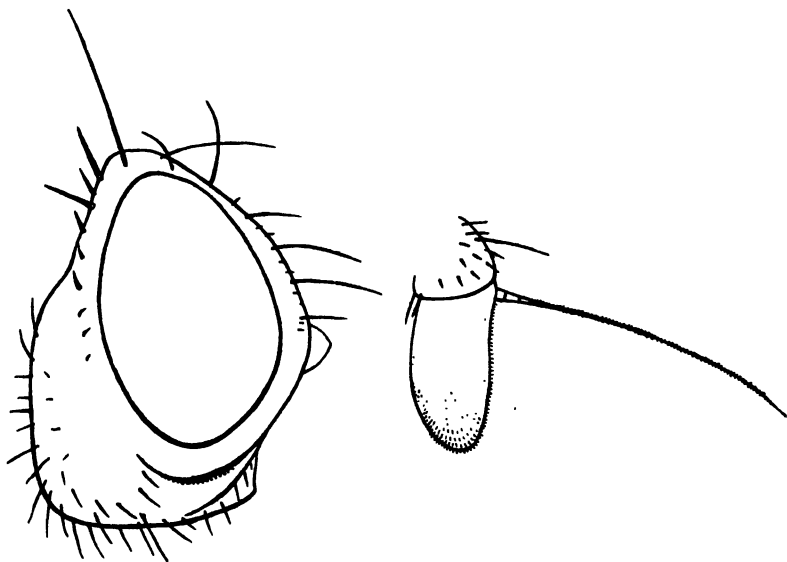


Fig. 70.

*Oedaspis formosana*, sp. nov. ♂,  $\times$  ca 35. Left antenna,  $\times$  ca 60.

yellow to greyish reddish brown, in the mesopleuron there are many long yellowish bristle-like hairs; scutellum reddish brown to yellowish brown, with 4 ill-defined blackish spots along the hind margin, one pair being near the base and the other near the tip; postscutellum dull brown to blackish.

Abdomen blackish brown, black pubescent and bristled, with the hind margin of each tergite yellowish or reddish, but two first tergites often entirely brownish; basal joint of ovipositor strongly shining, castaneous, with a broad yellowish median band; genitalia yellowish to brownish.

Wings yellowish brown to brown, with hyaline bands; basal band interrupted in R and An; subbasal band, from  $r_{1+2}$  (near to r-m) to the apex of An, broadly nearly the same in width throughout; median band, from just behind r-m to the middle of the mouth of Cu, nearly triangular, narrowed forwards; subapical band, from just after the tip

of stigma to the mouth of IIM<sub>2</sub>, near the base, widely interrupted on r<sub>2+3</sub>, somewhat convex; apical band, from R<sub>3</sub> to the mouth of IIM<sub>2</sub>, near the apex, nearly parallel with the subapical one, narrowest and often interrupted on r<sub>4+5</sub>; along the anterior margin there are two very small hyaline dots, one being at the apex of R<sub>3</sub> and the other at the apex of R<sub>1</sub>, very often these dots being scarcely connected with each other by a very fine marginal hyaline streak; all the bands (excepting the basal one) blackish margined; stigma a little longer than half the 2nd costal cell, with three blackish dots, one of which is at the tip, the second in the middle and the rest at the base; r<sub>4+5</sub> slightly curved, but not wavy; m-cu very slightly convex. Halteres yellow, with the knob more or less brownish; squamulae whitish yellow.

Legs pale yellowish brown, becoming much paler toward the tarsi, black pubescent and bristled.

All the bristles black, with the bristle of occipital row, the propleural bristles, the outer pair of vertical bristles and the postvertical bristles yellowish; fronto-orbital 2:4; dorso-central bristles two, but rarely three and two of which are placed in praesutural or postsutural disc; mesopleural bristles usually two, or rarely more than two; sternopleural one to three; pteropleural one or rarely two.

Length: Body 4–6 mm; wings 4.3–5.3 mm.

Hab. Formosa—Taito (II); Rikiriki (III); Rato (III).

The species reared from the stem-gall of *Artemisia capillaris*, THUMB.; types preserved in the Entomological Museum of Government Research Institute, Taihoku, Formosa.

## 122. *Qedaspis japonica*, sp. nov.

(Fig. 71; Pl. IX, fig. 6)

Very closely allied to the preceding species, but easily distinguished by the greyish yellow coloration, as well as by the rounded apex of third antennal joint.

♂ ♀. Greyish yellow species, of medium-sized. Frons greyish yellow, in the middle somewhat brownish, with a very few yellowish

pubescence; lunula greyish white; vertex without any blackish ocellar dot; face ashy yellow; back of the head greyish yellow, furnished with sparse strong yellowish hairs; cheeks ashy yellowish, with very sparse stout yellowish hairs, excepting one or two blackish ones. Antennae orange-yellow; 3rd joint distinctly longer than the second, or about as long as wide, with the apex broadly rounded; arista yellowish, becoming blackish apically, microscopically pubescent. Palpi and proboscis yellowish.

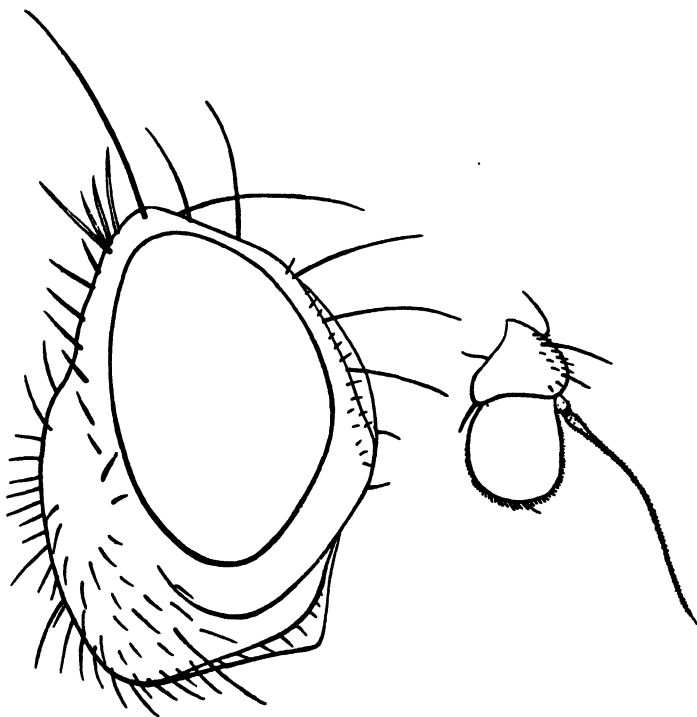


Fig. 71.

*Oedaspis japonica*, sp. nov. ♀,  $\times$  ca 32. Left antenna,  $\times$  ca 40.

Thorax greyish yellow, more or less brownish in the middle of mesonotum, covered with numerous yellowish stout but short hairs on the mesonotum and mesopleuron; scutellum shining yellow, with 4 castaneous marginal dots, which are well-defined and are distinctly

smaller than those in the preceding species; postscutellum black.

Abdomen more or less shining, reddish yellow to orange-yellow, black pubescent and bristled, often with an ill-defined dark basal band on each the 3rd to 5th (♂) or 6th (♀) tergites; basal joint of ovipositor strongly shining orange-yellow, with both the base and tip blackish; genitalia yellowish.

Wings as in *formosana*, but usually paler and in  $R_5$  with a very narrow hyaline apical spot; basal band more or less concave, slightly narrowed posteriorly; apical band often constricted in  $R_5$ , but not interrupted on  $r_{4+5}$ ; blackish median spot of the stigma often obsolete;  $m-cu$  always strongly convex.

Legs yellow to pale yellowish brown, black pubescent and bristled.

Chaetotaxy from *formosana* differing as follows: Fronto-orbital bristles 2:3 or rarely 2:4, the upper superior one being often yellowish; dorso-central always two; sternopleural one or two; pteropleural one.

Length: Body 5–6.5 mm; wings 5–6 mm.

Hab. Japan—Tsukumi (VII); Yoichi (VI).

The flies have been reared from the stem-gall of *Artemisia vulgaris indica*, MAXIM.; types in the Entomological Museum of Government Research Institute, Taihoku, Formosa.

### LIII. Genus SPHENISCOMYIA, BEZZI.

Memoirs of the Indian Museum, III., no. 3, p. 146 (1913).

*Spheniscus*, BECKER, Mitteil. Zool. Mus. Berlin, IV., p. 138 (*Sphaeniscus*) (1908).

Genotype - *Aciura filiola*, LOEW.

Head much wider than high, a little narrower than thorax, or about as long as a half the width; frons about as wide as eye, a little narrowed forwards; lunula narrow; vertex without occipital carina nor distinct vertical calli which are long and about half as long as frons; face narrow, distinctly longer than wide, slightly broadened beneath, with the antennal grooves rather indistinct and not reaching the mouth-edge, and with the eye-margins very narrow; face in profile nearly straight, but the upper mouth-edge distinctly produced forwards; back of the

head concave above and moderately swollen beneath; cheeks linear, with the horizontal and straight mouth-edge, and with the fine genal groove; vibrissal-edge indistinctly bristled. Eyes comparatively large, elliptical, the posterior margin being much less convex than in the anterior margin. Antennae inserted at just below the middle of eyes, not reaching to the upper mouth-edge; 3rd joint about  $1\frac{1}{2}$ -2 times as long as wide or the 2nd joint, with the upper margin straight, the tip being rounded; arista very short pubescent or bare. Palpi small and narrow, very slightly curved upwards, furnished with a few short bristles; proboscis broad and short.

Mesonotum short, subquadrate, about as wide as long, strongly convex above; scutellum proportionally large, subtriangular, swollen above.

Abdomen oval, about as long as thorax, a little wider than the latter, furnished with a few bristle-like hairs at the posterior margin of each tergite; 5th tergite of male distinctly shorter than the two preceding tergites together; 6th of female about as long as  $\frac{2}{3}$  the 5th; ovipositor depressed, shorter than abdomen, with the basal joint about as long as three preceding tergites together; genitalia not prominent.

Wings moderate in length, distinctly narrowed apically, with a single long marginal spine; stigma pointed, much shorter than the second costal cell; anal cell a little shorter than the 2nd basal cell, with the lower angle broadly pointed;  $IM_2$  broad, with the lower angle more or less pointed;  $r_{1+2}$  nearly straight;  $r_{1+3}$  very slightly curved, not bristly with the apical section parallel with  $m$ ;  $r-m$  perpendicular, near to  $m-cu$ , the latter is nearly parallel with the former.

Legs rather strong; front femora with a row of a few long bristles on the under side; middle tibiae with a single spur; hind femora with one or two bristles near the tip; hind tibiae with a row of short and sparse bristles.

Chaetotaxy complete; ocellar bristles strong, about as long as the inferior fronto-orbital pairs, parallel; fronto-orbital 2:2; inner vertical very strong, very much longer than the outer pair; postvertical very short; genal rather weak; bristles of occipital row comparatively long, nearly all black, rather sparse; prothorax with a very few yellowish

bristly hairs; dorso-central very near to the suture; notopleural 2; sterno-, ptero- and mesopleural 1; scutellar 4, the apical pair being shorter than the basal one.

Only one species found in our insect-fauna.

123. *Spheniscomyia sexmaculatus*, MACQUART.

Dipt. exot., II 3, p. 222, pl. XXX, fig. 5 (*Urophora*) (1843).

*Trypeta atilia*, WALKER, List. Dipt. Brit. Mus. IV., p. 1021 (1849).

*Ortalis sanctae-mariae*, BIGOT, Bull. Soc. ent. France, p. 548, pl. XIII, fig. 3 (1859).

*Trypeta melaleuca*, WALKER, Proc. Linn. Soc. VII., p. 238 (1864).

*Trypeta sexincisa*, THOMSON, Dipt. Eug. Resa, p. 579 (1868).

*Acidia melanica*, BEZZI, Denkschr. Med. Naturw. Ges. Jena, XIII., p. 193, fig. 3 (1908).

*Trypeta formosana*, ENDERLEIN, Zool. Jahrb., Abt. Syst. XXXI., Heft 3, p. 427, fig. H (1911).

♂ ♀. Shining black species of small-sized, with black wings which have 4 hyaline hind-marginal indentations. Frons dull-orange-yellow, whitish dusted on the lateral borders; lunula whitish to greyish; vertex somewhat brownish, with the vertical calli often shining; face greyish white with the eye-margins light yellowish; back of the head black, becoming greyish beneath, yellowish pubescent; cheeks orange-yellow, somewhat yellowish pubescent; vibrissal edge yellowish bristly. Antennae orange-yellow; arista black, with the base yellowish, microscopically pubescent; 3rd joint about as long as  $1\frac{1}{2}$  times the width; median seta of the second joint not prominent. Palpi light yellow, becoming orange-yellow toward the apex, blackish bristly; proboscis reddish yellow, with the base blackish.

Mesonotum with a greyish rustre, covered with a dark greyish tomentum and a rather sparse yellowish pubescence; pleurae coloured as in mesonotum, but less tomentose and nearly not pubescent, with a yellowish transverse median band which is narrowed beneath; scutellum and postscutellum coloured as in pleurae.

Abdomen black, with a metallic rustre, covered with a not dense greyish tomentum and a sparse blackish pubescence; ovipositor coloured as in tergites; genitalia black.

Wings blackish, with the basal fourth whitish hyaline; one triangular costal indentation from the costa to  $r_{4+5}$ , just after the tip of stigma; 4 indentations of the hind margin, the basal one (from  $m$  to the tip of  $an$ ) of which is parallel with the outer margin of basal hyaline area, the median one from near the posterior angle of  $IM_2$  to the middle of the mouth of  $Cu$  is very narrow, the subapical one in  $IIM_2$  extends from the fronto-interior angle to the tip of  $cu$ , and the apical one from the middle of the apical section of  $r_{4+5}$  to near the middle of the mouth of  $IIM_2$  is longer than the preceding one but shorter than the basal one and is sharply pointed anteriorly. Halteres orange-yellow; squamulae whitish.

Legs blackish, with the tibiae and tarsi yellowish, black and yellowish pubescent, and black bristly.

All the bristles black, but often postvertical yellowish or brownish, and rarely the base of upper superior fronto-orbital yellowish.

Length: Body 2-4.2 mm; wings 3.7-4.3 mm.

Hab. Corea—Koryo (VIII).

Japan—Hashimoto (IX); Tokusa (VII); Kyoto (VII); Kumamoto (VII); Yabakei (VIII).

Formosa—Taihoku (XI); Taichu (II); Toseikaku (XI); Taiheisan (VIII); Horisha (III); Ako (XII); Banshoryo (XI); Rokkiri (III, IV); Koshun (IV); Chipon (V); Tauran (V); Kotosho (III).

China; India; South Arabia; Africa; Madagascar.

#### LIV. Genus **ACIDIOXANTHA**, HENDEL.

Wien. Ent. Zeit. XXXIII., p. 83, (1914); Ann. Mus. Nat. Hung. XIII., p. 450 (1915).

Rather near to *Acidia*, but easily distinguished by no ocellar bristles, non-bristly  $r_{4+5}$ , and yellowish bristles or hairs.

Genotype—*Acidioxantha punctiventris*, HENDEL.

Head distinctly narrower than thorax, much broader than high, or a little shorter than a half the width; frons about as wide as eye, slightly narrowed forwards; lunula small, but broad; vertex distinctly



carinate, with the very short vertical calli; face a little longer than wide, strongly narrowed above, flat and straight, with the antennal grooves very indistinct, with the eye-margins narrow and slightly broadened beneath, and with the upper mouth-edge straight not reflexed nor deflexed; back of the head flattened, but the lower area moderately convex; cheeks about  $\frac{1}{3}$  as high as eye, with the narrow and very shallow genal groove; vibrissal-edge pubescent. Eyes elliptical, about half as wide as long, with the posterior margin less convex than the anterior margin, the upper angle being more or less narrowed. Antennae inserted in the middle of eyes, about  $\frac{3}{8}$  as long as face; 3rd joint about twice as long as wide or the 2nd joint, rounded at the tip; arista microscopically and very sparsely pubescent. Palpi short and rather broad, about  $2\frac{1}{2}$  times as long as wide, very slightly curved upwards, not distinctly bristled; proboscis rather narrow and short.

Mesonotum subquadrate, distinctly longer than wide, moderately convex; scutellum rather large, about  $\frac{2}{3}$  as long as wide, subtriangular, flattened above.

Abdomen oval, shorter than thorax, bristly at the tip and the lateral sides; 5th tergite of male as long as the two preceding tergites together; genitalia rather prominent.

Wings moderate in size, with a single long marginal spine; stigma very short, more or less pointed, shorter than half the second costal cell; anal cell about as long as the 2nd basal cell, drawn out into a rather short and narrow pointed lower angle; r-m after the middle of  $IM_2$ , straight and perpendicular; m-cu twice as long as r-m, nearly parallel with the latter, very slightly curved with more or less pointed lower angle of  $IM_2$ ;  $r_{2+3}$  more or less undulate;  $r_{4+5}$  entirely not bristled, slightly curved and parallel with m at the apical section.

Legs rather robust; front femora normally bristled; middle tibiae with three distinct spurs; hind femora with a few short bristles near the tip; middle femora with two very strong bristles near the tip; two posterior pairs of tibiae with a row of strong bristles on the outer side.

Chaetotaxy complete, but ocellar bristles wanting; fronto-orbital 2:2, the inferior pairs being placed at the middle; inner vertical much

longer than the outer pair; postvertical moderate in length, parallel, rather near from each other; genal 1, rather short; prothorax with a few bristly hairs; dorso-central in the middle of postsutural disc, a little behind the line connecting the anterior supra-alar bristles; meso- and notopleural 2; sterno- and pteropleural rather strong; scutellar 4, equal in length, the apical pair being convergent; all the bristles yellowish.

Only one species from Formosa.

124. *Acidioxantha punctiventris*, HENDEL.

Ann. Mus. Nat. Hung. XIII., p. 451 (1915).

♂. Pale yellow species of rather small-sized, with reddish yellow abdomen and hyaline wings, the latter having light yellowish bands. Frons pale yellow, somewhat waxy toward the lateral margins, very sparsely pale yellow pubescent; lunula whitish, more or less brownish margined; vertex with the very narrow sharp brownish occipital carina, with the shining narrow oblique vertical calli, and with an ocellar triangle very slightly infuscated; face greyish white, somewhat waxy; back of the head yellow, becoming whitish beneath, very sparsely brownish pubescent; cheeks light yellow, covered with many long and yellowish hairs; vibrissal edge with very sparse and short pubescence. Antennae yellow; 3rd joint distinctly dusted with a white tomentum; arista black, with the base yellowish; first and second joints yellowish bristly, with a long yellowish median seta on the latter. Palpi pale yellow, furnished with a few rather long yellow hairs and with a very few rather short brown bristles with the upper margin straight and the under margin convex, the apex being rounded; proboscis more or less brownish.

Thorax entirely yellow, densely yellow-pubescent on the mesonotum, but very sparsely on mesopleuron and nearly bare on the rest.

Abdomen reddish yellow, yellow pubescent and bristled; 4th tergite with a black spot in the lateral border along the posterior margin; 5th tergite with two pairs of black spots, of which the median pair is along the anterior margin and the lateral pair is along the posterior margin; genitalia reddish brown.

Wings hyaline, with a small blackish dot at the end of sc, and with 5 light yellow bands as follows: Basal band, from the costal cell to the anal cell, very irregularly shaped and less distinct; submedian band, from the apical half the second costal cell to the apex of  $R_3$ , very short but broad, connecting with the median band, the latter extends from the costa to Cu straightly over r-m; subapical band, from the costa to the apex of Cu, through over m-cu, parallel with the median one, and nearly the same in width to the latter; apical band, from the costal end of submedian one to the tip of m, along the costa, somewhat darker than others. Halteres reddish brown; squamulae whitish yellow, white-fringed.

Legs pale yellow, yellowish pubescent and bristled, with 3 yellowish spurs of intermediate tibiae, the intermediate one of which is very long.

Length: Body 5 mm; wings 4.8 mm.

Hab. Formosa—Ariko (VI); Arikan (VI).

No type in the Entmological Institute of Kaiser Wilhelm Gesellschaft, Berlin-Dahlem, Germany, but under the label of *Acidioxantha punctiventris* there was a blackish species belonging to the other genus.

#### LV. Genus *OXYACIURA*, HENDEL.

LINDNER, Fl. Palaearkt., 49, p. 111 (1927).

Allied to the Genus *Aciura*, ROBINEAU-DESVOIDY, but easily distinguished by the shape of head and by the pointed third antennal joint.

Genotype - *Aciura tibialis*, ROBINEAU-DESVOIDY.

Head somewhat broader than thorax, distinctly broader than high, about half as long as wide; frons nearly parallel-sided, as wide as eye, flat; lunula distinct, nearly semicircular; vertex more or less carinate, with the vertical calli rather small, and with the ocellar triangle comparatively large; face concave, about as long as wide, rather slightly broadened beneath, with the antennal grooves not distinct and the eye-margins very narrow; back of the head more or less concave on the upper area, and rather strongly swollen on the lower area;

cheeks narrow, with very narrow genal groove; vibrissal-edge very shortly bristled. Eyes large, but not very broad, about half as wide as long, with the posterior margin distinctly less convex and the upper angle narrower than the lower one. Antennae inserted at the middle of eyes, not reaching the upper mouth-edge; 3rd joint about  $2\frac{1}{2}$  time as long as wide, with the upper margin straight, its tip more or less pointed above; arista microscopically pubescent. Palpi small and narrow, slightly curved upwards and slightly bristled; proboscis short.

Mesonotum as long as wide, somewhat quadrate, strongly convex above; scutellum short and broad, moderately convex above.

Abdomen oval, shorter than or about as long as thorax, the apical tergite being furnished with long but very fine bristles; 5th tergite of male a little longer than the 4th; 6th tergite of female a little shorter than the 5th; ovipositor short or about as long as the abdomen, with its basal joint a little or conspicuously longer than the 6th tergite; genitalia very small; hypopygium more or less prominent.

Wings comparatively large, moderately narrowed apically, with a distinct but short marginal spine; stigma very short,  $\frac{1}{4}$ – $\frac{1}{3}$  as long as the second costal cell, very slightly pointed; anal cell shorter than the 2nd basal cell, with the lower angle pointed but not produced; r-m perpendicular, slightly curved or straight, very near to m-cu, the latter is about twice as long as the former;  $r_{2+3}$  wavy;  $r_{4+5}$  slightly wavy, not bristly the tip being more or less convergent with  $r_{2+3}$ .

Legs rather robust; front femora very sparsely bristled beneath; middle tibiae with a single spur; hind tibiae with a row of very short bristles on the outer margin.

Chaetotaxy complete; ocellar bristles short; fronto-orbital 1:3; inner vertical very strong, while the outer pair is very short; post-vertical short but strong, black or yellowish; genal comparatively strong; bristles of occipital row rather short; dorso-central near to the suture, before the line connecting the anterior supra-alar bristles; notopleural 2; sterno-, meso- and ptero-pleural 1, rather strong; scutellar only one basal pair.

Only one species found in our insect-fauna.

125. *Oxyaciura formosae*, HENDEL.

Ann. Mus. Nat. Hung. XIII., p. 460 (*Aciura*) (1915).

Somewhat allied to *tibialis*, ROB-DES., but easily distinguished by the hyaline pattern of wings.

♂ ♀. Shining black species, of very small-sized. Frons yellowish or reddish brown, very sparsely pale-pubescent, with the eye-margins often yellowish or whitish, and with 3 pairs of black lateral dots which are placed at the base of each the inferior fronto-orbital bristles; lunula dark brown, but distinctly dusted with a greyish tomentum; vertex with a large blackish ocellar patch, and with the blackish vertical calli; face reddish brown to dark brown, furnished with many short black pubescence on the infero-external borders; back of the head greyish black, black pubescent; cheeks greyish. Antennae yellowish brown to pale brown, with the upper margin and the apex of 3rd joint almost always blackish; arista black, with the base yellowish; second joint without distinct median seta. Palpi yellowish brown, black bristly.

Thorax shining black, more or less greyish tomentose, black pubescent on the mesonotum, with the humeral calli more or less paler. Abdomen shining black, more or less greyish tomentose, and black pubescent and bristled; basal joint of ovipositor shining black, very sparsely black-pubescent, with the 2nd and 3rd joints reddish or yellow-brown; genitalia black.

Wings black, with 10 hyaline indentations and 2 spots as follows: Three costal indentations; the basal one smallest, in the second costal cell near the base, extending behind to  $r_s$ ; the second one just after the stigma, extending behind to  $r_{4+5}$  near  $r-m$ , largest and triangular; 3rd one very near the second indentation, a little smaller than the preceding one, extending behind but not to  $r_{4+5}$ . Seven hind marginal indentations; 3 basal ones of which are not triangular, the basal one being in the allula, the next one at the base of  $Ax$  and the rest at the tip of the latter; two apical indentations in  $IIM_2$ , near the base, the basal one being longer and reaching the anterior basal corner of the cell; two middle ones in  $Cu$ , shorter than two apicals but a little

broader. Halteres reddish yellow; squamulae blackish. One spot in  $R_5$ , near the middle, a little longer than the very small spot in  $IM_2$ , the latter being rather near m-cu.

Legs blackish, with tibiae and tarsi yellowish.

All the bristles black, but postvertical bristles yellowish; ocellar bristles rather long, very far apart from each other, at the ocellar triangle there are often two pairs, the inner pair of which is very weak and short.

Length: Body 2.8–3.8 mm; wings 3.5 mm.

Hab. Formosa—Chikutokaku (XI); Takao (IV); Kotosho (III).

Yayeyama – Ishigaki (XI).

Type in the National Museum of Hungary, Budapest.

#### LVI. Genus *OKUNIOMYIA*, nov.

Distinguished from all the genera belonging to the subfamily *Trypetinae* by the venation of wings and by the non-banded wings, as well as by the chaetotaxy.

Genotype—*Okuniomyia bimaculicosta*, sp. nov.

Head about as wide as thorax, distinctly broader than high, a little higher than long; frons broader than eye, but longer than wide, narrowed forwards, finely and longitudinally striate, in profile nearly straight; lunula very narrow, distinctly sunk; vertex distinctly carinate, with the very narrow vertical calli, which are not reaching the middle of frons; face somewhat quadrate, very slightly widened below, about half as long as frons, flat, with the very broad antennal grooves and the very narrow eye-margins, but the lower part of the latter is rather broad; epistoma very distinct, perpendicular, about half as long as face; back of the head rather strongly convex, but not very much produced behind the eyes; cheeks very narrow, with a fine genal groove; vibrissal-edge very shortly bristled. Eyes oval, with the posterior margin comparatively strongly convex and the upper angle obtusely rounded. Antennae inserted at the middle of eyes, reaching below to the epistoma, very broad; 3rd joint rounded, a little longer than wide; arista very shortly

pubescent. Palpi comparatively prominent, slightly curved upwards, distinctly but rather sparsely bristled; proboscis broad and short.

Mesonotum rather long, parallel-sided with the more or less rounded anterior and posterior margins, about  $1\frac{1}{2}$  times as long as wide, strongly convex above, the suture being rather near to the middle; scutellum rather long, strongly convex above.

Abdomen distinctly shorter than thorax, bristly toward the tip; 6th tergite of female distinctly shorter than the 5th; the basal joint of ovipositor rather conical, distinctly bristled at the tip, shorter than the two preceding abdominal tergites together, and broader than long.

Wings narrow, slightly narrowed apically, without marginal spine and with straight veins; stigma very narrow and pointed, about half as long as the second costal cell; anal cell shorter than the 2nd basal cell, with the apical margin convex, pointed at the upper angle, with the lower angle obtusely rounded;  $IM_2$  narrow, with the pointed lower angle; r-m distinctly before the middle of  $IM_2$ , perpendicular, very short; m-cu short and perpendicular, about  $2\frac{1}{2}$  times as long as r-m;  $r_{4+5}$  bare, slightly bent upwards at the base of the apical section; but distinctly divergent with m.

Legs rather narrow, bristly as usual, but all the bristles very weak; middle tibiae with a single spur.

Chaetotaxy complete, but inferior fronto-orbital and pteropleural bristles wanting; ocellar very strong, divergent, longer than inner vertical pair, the latter being as long as the outer pair; superior fronto-orbital 1; postvertical rather weak, parallel, placed near from each other; genal rather weak; bristles of occipital row rather conspicuous and numerous; dorsocentral 3, the anterior pair being in the middle of praesutural disc, the intermediate one just behind the suture and the posterior pair distinctly before the line connecting the anterior supra-alar bristles; praescutellar 1, far before the posterior margin; notopleural 2; meso- and sterno-pleural 1, rather weak; scutellar 4, the apical pair being shorter and convergent. All the bristles black.

The present genus might be belonging to the family *Ortalidae*.

Only one species from Formosa.

126. *Okuniomyia bimaculicosta*, sp. nov.

(Fig. 72; Pl. X, fig. 2.)

♀. Shining yellow species, of small-sized, with dark castaneous abdomen and with glass-hyaline non-banded wings. Frons whitish yellow, with an ill-defined orange-yellow longitudinal streak in the middle from the ocellar triangle to the lunula, and with a distinct lateral sulcus which is far apart from the eye; striation of frons distinct all over the whole surface; lunula light yellow, with the margin more or less orange-yellow; vertex with a conspicuously elevated large ocellar triangle and the waxy yellow vertical calli, the former being more or less shining but not specially coloured; face pale whitish yellow, with the antennal grooves more or less brownish below, and with the epistoma yellowish; back of the head shining pale reddish yellow, palened toward the occipital foramen and cheeks, covered with very sparse but long blackish bristle-like hairs; cheeks whitish yellow, with blackish bristle-like hairs on the vibrissal edge. Antennae pale

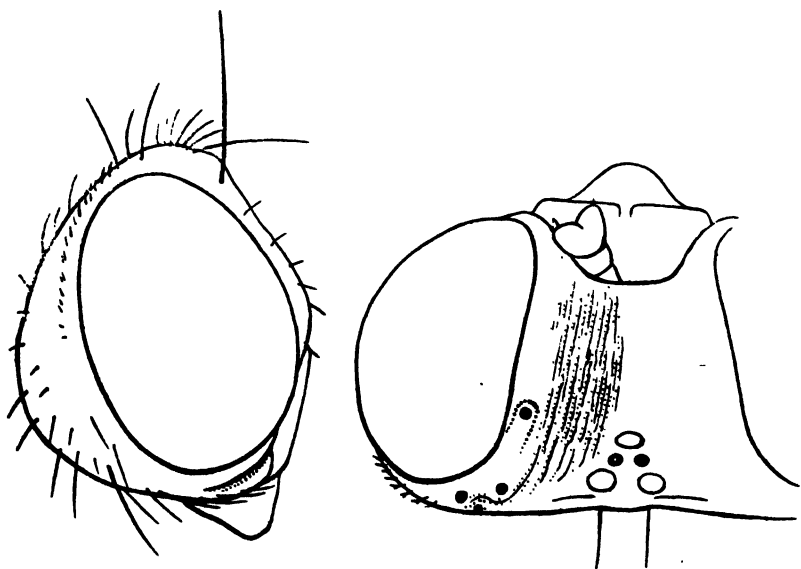


Fig. 72.

*Okuniomyia bimaculicosta*, sp. nov. ♀, × ca 40



yellow, with the arista black but its base yellowish, and with a very short black median seta of second joint.

Palpi brown, black bristly; proboscis dark brown.

Mesonotum shining pale reddish yellow, covered with many rather long black hairs; pleurae strongly shining, light yellow, with a large ill-defined castaneous patch in the mesopleuron; scutellum shining orange-yellow, very sparsely pubescent; postscutellum strongly shining pale reddish yellow.

Abdomen shining castaneous, very sparsely long-pubescent; basal joint of ovipositor reddish yellow.

Wings glass-hyaline, slightly tinged with a yellow colour, with the black stigma and two blackish spots, the apical one of the latter is well-defined and extending from the apex of  $R_1$  to the apex of  $R_5$ , and the basal one is placed at the base of  $R_5$  and is ill-defined.

Legs light yellow, yellow pubescent and black bristled.

Length: Body 4 mm; wings 4.5 mm.

Described from only one female, collected by Mr. T. OKUNI, in Formosa (Musha V), and preserved in the Entomological Museum of Government Research Institute, Taihoku, Formosa.

## LVII. Genus **EURIBIA**, MEIGEN.

Nouv. classif., p. 36 (1800).

*Tephritis*, LATREILLE, Hist. Nat. Crust. et Ins. XIV., p. 389 (1805).

*Urophora*, ROBINEAU-DESVOIDY, Myodaires, p. 769 (1830).

*Asimoneura*, (Sub. g.) CZERNY, Verh. Zool. bot. Ges. Wein, LIX., p. 253 (1910).

Black species, with head, humeral callus, notopleural streak and scutellum yellow, with 4 blackish or brownish bands of wings, and with more or less geniculate proboscis.

Genotype—*Musca cardui*, LINNAEUS.

Head almost always a little broader than thorax, about as broad as or a little broader than high, when seen from above semicircular; frons broader than eye, slightly narrowed forwards; lunula very conspicuous; vertex not carinate, with the very short vertical calli, which

are not reaching the apex of the large ocellar triangle; face broad, distinctly broadened beneath, flat or concave, with the antennal grooves indistinct and the eye-margins very broad throughout; epistoma narrow; back of the head moderately convex; cheeks broad, about as broad as  $\frac{1}{8}$ – $\frac{1}{3}$  height of eye, with the genal groove fine; vibrissal-edge more or less bristly. Eyes rather round, the posterior margin being much less convex, with the upper angle rather angulate and the lower angle very broadly rounded. Antennae inserted below the middle of eyes, not reaching to the epistoma; 3rd joint twice as long as wide, with its upper margin straight or concave and its tip rounded; arista very indistinctly pubescent. Palpi rather broad, nearly straight, furnished with very few indistinct bristle-like hairs at the tip; proboscis moderately elongate, geniculate.

Mesonotum subquadrate, very little longer or shorter than broad, convex above; scutellum rather small, strongly swollen.

Abdomen almost always a little longer than thorax, strongly convex above, distinctly bristled at the tip; 6th tergite of female distinctly shorter than the 5th; 5th of male distinctly or a little longer than or as long as the two preceding tergites together; ovipositor cylindrical, about 1–3 times as long as abdomen, distinctly pubescent, its basal joint conical; hypopygium rather prominent, but genitalia rather small.

Wings moderate in size, more or less narrowed apically, with one or two very indistinct marginal spines; stigma rather large, but distinctly shorter than the second costal cell, pointed; anal cell about as long as the 2nd basal cell, closed with the perpendicular but convex anal cross-vein;  $r_{2+3}$  and  $r_{4+5}$  very slightly undulate, the latter not bristly and not divergent with  $m$ ;  $r-m$  behind the middle of  $IM_2$ , perpendicular or a little oblique, its posterior end being nearer to the wing-tip;  $m-cu$  about twice as long as  $r-m$ , almost always slightly convex outwards, perpendicular, or slightly oblique outwardly at the posterior end.

Legs rather robust, bristly as usual, but the posterior femora without long bristles near the tip; middle tibiae with more than one spur.

Chaetotaxy complete: Ocellar bristles almost always very strong,

divergent; fronto-orbital 1:2 or rarely 1:3-5; inner vertical always longer than the outer pair; genal weak; bristles of occipital row rather strong; dorso-central 1, placed almost always a little before the line connecting the anterior supra-alar bristles; notopleural 2; meso-, sterno- and ptero-pleural variable in number, but almost always 1 and strong, except the latter rather weak; scutellar 4, nearly the same in length, the apical pair being convergent.

#### Key to the Japanese Species.

1. Wings with 4 blackish brown transverse bands.
  2. The first (basal) band reaching the posterior margin of wing; femora entirely yellowish. .... *misakiana*, MATSUMURA.
  22. The first band not reaching the posterior margin of wing; femora nearly entire black. .... *formosana*, sp. nov.
11. Wings with 3 brown bands.
  2. Two first bands very far apart from each other at the posterior margin of wing..... *japonica*, sp. nov.
  22. Two first bands united at the posterior margin of wing.... *sachalinensis*, sp. nov.

#### 127. *Euribia sachalinensis*, sp. nov.

(Fig. 73; Pl. X. fig. 5.)

Near to *solstitialis*, LINNAEUS, but easily distinguished from that by the short pterostigma which is about half as long as the second costal cell, the pointed lower angle of anal cell and the long proboscis.

♂ ♀. Frons a little longer than wide, microscopically pubescent, orange-yellow; lunula whitish; vertex with an irregularly shaped dark ocellar dot, and with the straight and narrow vertical calli; face flat, with the broad but shallow antennal grooves, whitish yellow except the eye-margins yellow; back of the head black, with the rather broad yellow margin, sparsely black pubescent; cheeks about  $\frac{1}{6}$  as high as the eye, yellow, with a deep genal groove which extends above to the lower third of the posterior margin of eye; vibrissal edge with many black hairs. Antennae pale reddish yellow; 3rd joint with the upper margin rather straight and with the apex evenly rounded in the male but narrowly rounded in the female; arista black, with the basal third

yellowish, microscopically pubescent; median seta of second joint indistinct. Palpi orange-yellow to pale yellowish brown, black pubescent; proboscis orange-yellow to pale yellowish brown, narrow and long, about as long as height of head, the apical portion being very narrow but not longer than the stem.

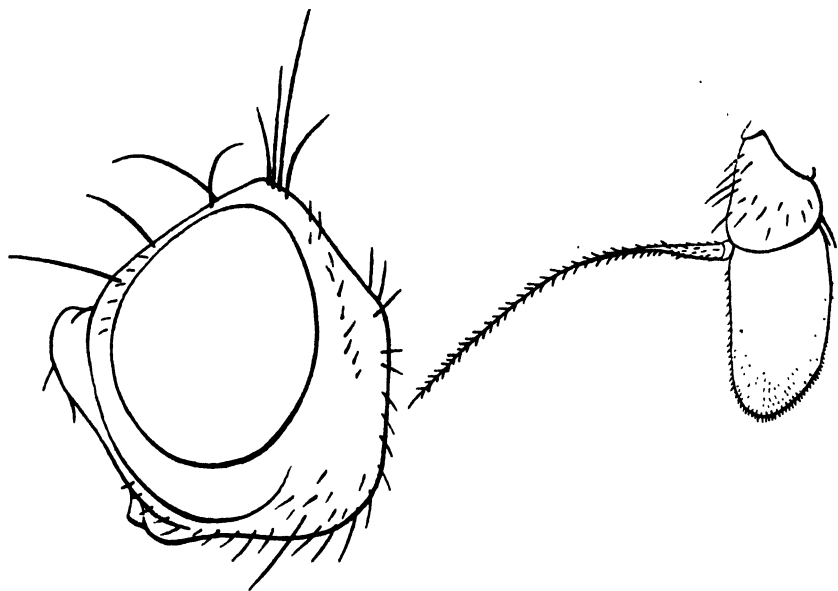


Fig. 73.

*Euribia sachalinensis*, sp. nov. ♀,  $\times$  ca 35. Right antenna,  $\times$  ca 60.

Mesonotum densely covered with a greyish yellow tomentum, and covered with many oblique blackish pubescence, with the humeral callus whitish yellow to yellow but the anterior vertical surface blackish; pleurae very slightly dusted, with a broad whitish yellow notopleural streak from the humeral callus to the wing-base; scutellum yellow, but the lateral sides brownish; postscutellum black.

Abdomen moderately shining, very slightly dusted with a greyish tomentum and covered with many black hairs; 5th tergite of male as long as the two preceding tergites together, shining, with a metallic rustre; basal joint of ovipositor black, about  $1\frac{1}{2}$  times as long as all

the tergites together, with the basal half conical, and with the apical half narrow-cylindrical and transversely striate, black pubescent but not bristly; genitalia black, with the dark brown appendages.

Wings milky white, somewhat yellowish toward the base, with 3 distinct blackish bands and one indistinct brownish basal band. Three blackish bands similar in width; first (median) band, from the stigma to the tip of an, through over r-m, slightly notched on the longitudinal veins toward the both sides, convex; 2nd (subapical) band parallel and not connecting with the preceding one, through over m-cu; 3rd (apical) band from the anterior end of subapical band to the apex of IIM<sub>2</sub>, along the costa. One brownish band, at the apex of anal cell, a little extending forwards to the base of R<sub>1</sub>, very irregularly shaped and very ill-defined, never connecting with the median band. Stigma hardly half as long as the second costal cell, blackish brown; anal cell a little shorter than M, with the convex anal cross-vein, but the lower angle distinctly pointed; r-m straight, placed distinctly after the middle of IM<sub>2</sub>; m-cu almost always convex, but very rarely straight. Halteres yellowish to pale brownish yellow; squamulae milky white, with pale yellowish fringe.

Legs dull-yellow to reddish yellow, black pubescent and bristled.

Length: Body 4-7 mm; wings 4.8-5.2 mm.

Hab. Saghalien—Konuma (VII); Kaibato (VII).

Types in the Entomological Museum of Government Research Institute, Taihoku, Formosa.

128. *Euribia japonica*, sp. nov.

(Fig. 74; Pl. X, fig. 4.)

Very near to the preceding species, differing in the non-pointed lower angle of anal cell, in the distinctly pointed lower angle of IM<sub>2</sub>, and in no basal band of wings; and also allied to *solstitialis*, LINNAEUS, but easily distinguished by the pointed lower angle of IM<sub>2</sub>, by the proportionally short stigma, by no distinct brownish basal band of wings, and by the long proboscis.

♂ ♀. Frons a little longer than wide, orange-yellow, microscopically pubescent, with the eye-margins more or less whitish and distinctly but very sparsely brown pubescent; lunula glassy white; vertex with a large yellow ocellar triangle and with the proportionally broad yellow vertical calli; face whitish yellow, slightly concave; back of the head black, but the margin yellow, with many black hairs and a few black bristles; cheeks yellow, with a distinct genal groove as in *sachalinensis*; vibrissal edge furnished with a few black bristly hairs. Antennae orange-yellow or reddish yellow; 3rd joint rather broad, shorter than twice the width, with the upper margin straight, and with the apex in the both sexes distinctly narrowly rounded; arista black, with the basal  $\frac{2}{3}$  yellowish, microscopically pubescent; second joint without distinct median seta. Palpi orange-yellow, palened toward the base; proboscis yellow to pale brownish yellow, distinctly longer than the height of head, slender, the apical portion being as long as the stem.

Mesonotum distinctly greyish yellow tomentose, black pubescent; humeral callus pale yellow or yellow, with the anterior vertical surface blackish; pleurae shining blackish castaneous, with a broad pale yellow or yellow notopleural streak, along the posterior margin of mesopleuron

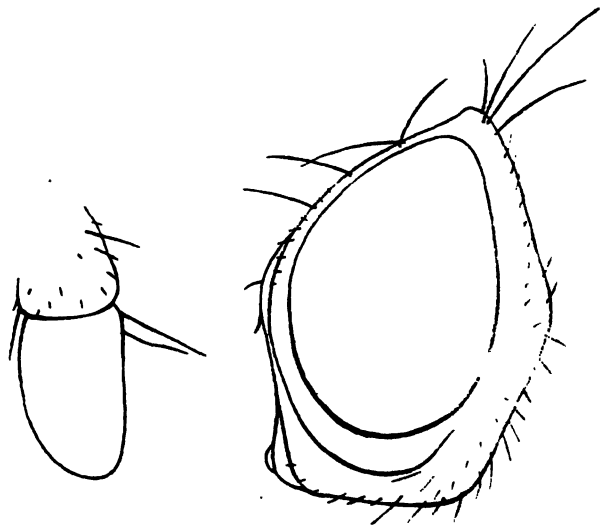


Fig. 74.

*Euribia japonica*, sp. nov. ♀,  $\times$  ca 35. Left antenna,  $\times$  ca 60.

there is a narrow transverse same-coloured band and at the base of

front coxae a small similarly tinged spot; scutellum yellow, with a small brown latero-basal spot; postscutellum entirely black.

Abdomen very slightly dusted, sparsely black pubescent and bristled; 5th tergite of male as long as the two preceding tergites together, with some metallic rustre; 6th tergite of female as long as the 5th; basal joint of ovipositor and genitalia as in the preceding species.

Wings differing from *sachalinensis* as in follows: Bands brownish and narrow; basal band wanting, but rarely there is a trace of yellowish colour; subapical band always straight. Anal cell with the distinct convex cross-vein, the inferior angle being never pointed; IM<sub>2</sub> with the almost always straight m-cu and the well-pointed inferior angle. Halteres and squamulae as in *sachalinensis*.

Legs quite the same to those of the preceding species.

Length: Body 3-6 mm; wings 3-5 mm.

Hab. Japan—Mojji (VI); Fukuoka (VI); Tsugumi (VII); Higashiyama (VII); Sapporo (VI).

This species is often collected on the flowers of *Arctium lappa*; types in the Entomological Museum of Government Research Institute, Taihoku, Formosa.

129. *Euribia formosana*, sp. nov.

(Fig. 75; Pl. X, fig. 6.)

Allied to *eriolepidia* and *congrua*, LOEW, but easily distinguished from the former by the broader IM<sub>2</sub> and by the rather shorter ovipositor; from the latter by a little longer ovipositor and by the r-m much after the middle of IM<sub>2</sub>.

♀. Frons as long as wide, dull orange-yellow, with the pale reddish brown lunular margin, conspicuously but microscopically pubescent, along the eye-margins there is a few distinct black pubescence; lunula flat (in the two preceding species distinctly elevated), whitish; vertex with a large flat ocellar triangle, and with the rather narrow vertical calli; face slightly concave, yellowish white, with the

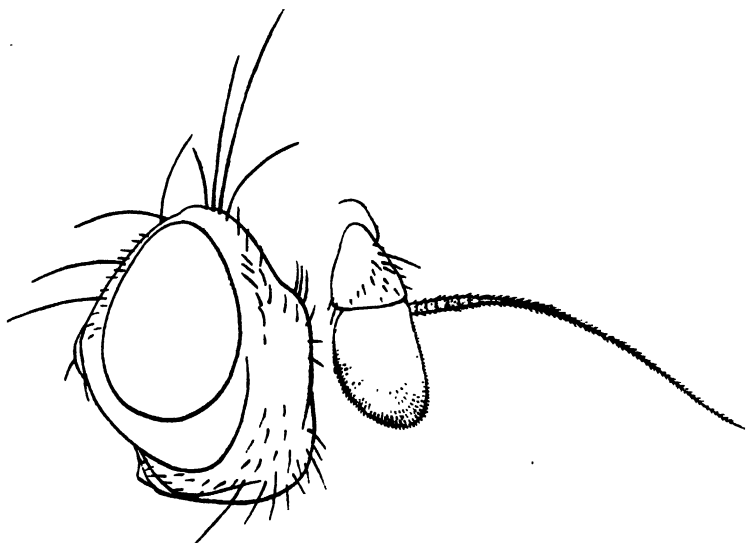


Fig. 75.

*Euribia formosana*, sp. nov. ♀,  $\times$  ca 28. Left antenna,  $\times$  ca 48.

proportionally broad yellow eye-margins; back of the head deep black, with the broad margin yellow, furnished with a few black bristly hairs; cheeks very broad, nearly half as high as the eye, with a distinct genal groove as in the preceding species; vibrissal edge furnished with a few black bristly hairs. Antennae reddish yellow, broad; 3rd joint about as long as one and a half the width, with its upper margin straight and its apex narrowly rounded; median seta of second joint distinct, but shorter than the joint; arista black, with its basal third yellowish, microscopically pubescent. Proboscis slender, not longer than the height of head, the apical portion being nearly as long as the stem; palpi straight, reddish yellow, more or less palened toward the base, furnished with a very few short bristles.

Mesonotum very slightly dusted, conspicuously black pubescent; pleurae deep-black, distinctly black-pubescent nearly all over the surface, with a well-defined yellow notopleural streak which extends from the upper surface of humeral callus to the wing-base, along the mesopleuron there is a yellowish brown band and along the upper margin of



pteropleuron a broad pale yellowish brown streak; scutellum orange-yellow, with a broad black basal band, furnished with a very few rather long pubescence; postscutellum entirely black.

Abdomen slightly tomentose, black pubescent and bristled; 6th tergite as long as the 5th; basal joint of ovipositor longer than abdomen, black, black pubescent; at the basal  $\frac{2}{3}$  conical, and at the rest narrow, cylindrical and not transversely striated.

Wings milky whitish, toward the base yellowish, with 4 distinct blackish bands. First (or basal) band, from the second costal cell to the anal cell, broadest and extending a little exteriorly along an; second (or median) band, from the black stigma to the lower angle of Cu, through over r-m, slightly curved outwards, slightly narrowed hindwards and united with the first one between the costa and  $r_{4+5}$ ; 3rd (or subapical) band, on m-cu, extending nearly straightly forwards to the costa and hindwards to the posterior margin; 4th (or apical) band, along the costa, extending from the anterior end of the subapical band to the apex of  $IIM_2$ . Stigma about  $\frac{2}{3}$  as long as the second costal cell; anal cell a little shorter than the second basal cell, with the distinctly convex anal cross-vein; r-m rather near the middle of  $IM_2$ ; m-cu moderately convex;  $IM_2$  with the lower angle more or less pointed, conspicuously broadened exteriorly. Halteres and squamulae greyish yellow, the latter furnished with pale fringe.

Legs blackish brown, with the tibiae and tarsi yellowish brown, and with the front femora paler than the remaining ones; bristles and hairs black.

Length: Body 6 mm; wings 5 mm.

Described from only one specimen collected in Formosa (Niitaka-prefecture VII); preserved in the Entomological Museum of Government Research Institute, Taihoku, Formosa.

### 130. *Euribia misakiana*, MATSUMURA.

(Pl. XI, fig. 1.)

Thous. Ins. Jap., Add. II, p. 419, pl. XXIII, fig. 15 (*Trypeta*) (1916.).

Allied to *quadrifasciata*, MEIGEN, but at once distinguished by the broad frons and the large size.

♂. Frons as long as wide, yellow, on the eye-margins furnished with many black pubescence; lunula whitish, brown margined; vertex with the rather small ocellar triangle, and with the proportionally broad pale yellow vertical calli; face flat, yellowish white, with the broad yellow eye-margins; back of the head brown, with a broad pale yellow margin, very sparsely black-pubescent; cheeks broad, nearly half as high as the eye, with a deep genal groove as in the preceding species; vibrissal edge furnished with a few short black bristly hairs. Antennae yellow, broad; 3rd joint about as long as  $1\frac{1}{2}$  times the width, with the upper margin convex at just before the tip, and with the apex broadly rounded but the upper tip distinctly pointed; arista brown, with the basal  $\frac{2}{3}$  pale yellow, short-pubescent; median seta of second joint not conspicuous. Palpi yellowish brown, black pubescent; proboscis yellow, moderate in both the length and width, its apical portion a little longer than the stem.

Mesonotum distinctly greyish yellow tomentose, black pubescent, with the humeral calli yellow; pleurae deep black, very sparsely black-pubescent, with a very broad yellow notopleural streak which extends from the humeral callus to the posterior base of wing and occupies at the upper half the pleuron, on the hind margin of mesopleuron with a narrow yellowish white band, and at the base of front coxa with a reddish yellow spot; scutellum orange-yellow, bare from pubescence, with a very narrow blackish brown basal streak which becomes suddenly broad at the sides; postscutellum black.

Abdomen more or less tomentose, black pubescent and bristled; 5th tergite distinctly shorter than the two preceding tergites together; genitalia rather prominent, castaneous, with the dull yellow appendages.

Wings milky-white, with the base very slightly yellowish, and with 4 broad blackish bands. Basal band, from the second costal cell to the axillary cell, broadest; median band, from the stigma to the basal half the mouth of Cu, through over r-m, united with the preceding one between the costa and m; subapical band, on m-cu, extending straightly forwards to the costa and hindwards to the posterior margin; apical band, along the costa, from the anterior end of the subapical

one to the apex of IIM<sub>2</sub>; three apical bands nearly the same in width. Stigma about more than half the second costal cell; anal cell hardly as long as the second basal cell, with the convex cross-vein; m-cu strongly convex; IM<sub>1</sub> conspicuously widened apically; r-m oblique and straight, distinctly after the middle of IM<sub>2</sub>; r<sub>2+3</sub> rather distinctly undulate; r<sub>4+5</sub> conspicuously curved forwards at the base of apical portion. Halteres and squamulae brownish yellow.

Legs reddish yellow, black pubescent and bristled.

Length: Body 6 mm; wings 5.5 mm.

Hab. Japan—Moji (VI); Misaki.

Type in the Entomological Museum of the Hokkaido Imperial University, Sapporo, Japan.

### Subfamily **TEPHRITINAE** HENDEL.

LINDNER, Fl. Palaearkt., 49, p. 20 (1927).

*Trypaneinae* + *Rhabdochaetinae* + *Schistopterinae*, BEZZI, South Afr. Trypaneid Diptera (Ann. South African Mus. XIX., 3) (1924).

It is very difficult to separate from the preceding subfamily *Trypetinae*, but it is usually distinguished from that by the long 6th tergite of female, which is almost always as long as or longer than the 5th or very rarely a little shorter than the 5th<sup>(15)</sup>, by the thick, obtusely pointed, whitish bristles of occipital row, which are in some cases fine, sharply pointed and blackish<sup>(16)</sup>, and by the reticulated dark wings, as well as by microscopically pubescent or clearly bare arista which is never plumose.

### Key to the Japanese Genera.

1. Wings not incised at the ending of sc; bristles of the head normal.
2. r<sub>4+5</sub> bearing no bristles.
3. Head higher than long; the mouth-edge in profile never longer than the height of head.
4. Bristles of occipital row thin and pointed; upper superior fronto-

(15) If the 6th tergite is shorter than the 5th, it is distinguished from *Trypetinae* by the obtusely pointed whitish occipital bristles.

(16) If the occipital bristles are fine and black, it is distinguished from *Trypetinae* by the long 6th tergite of female.

- orbital bristle when present directing inwards; wings distinctly banded.
5. r-m before the middle of IM<sub>1</sub>; dorso-central bristle at the middle of postsutural area.....*Pseudorellia*, nov.
55. r-m after the middle of IM<sub>1</sub>; dorso-central bristle very near to the transversal suture..... *Chaetostomella*, HENDEL.
44. Bristles of occipital row thick and obtuse; upper superior fronto-orbital bristle directing hindwards; wings numerous hyaline-spotted.
5. Dorsocentral bristle about on the line connecting the anterior supra-alar bristles.
6. Proboscis normal.
7. Wings very broad and short; the lower angle of IM<sub>2</sub> being rather pointed. .... *Platensina*, ENDERLEIN.
77. Wings very narrow and long; the lower angle of IM<sub>2</sub> being nearly right angle..... *Elaphromyia*, BIGOT.
66. Proboscis elongate and geniculate.....  
.....*Sphenella*, ROBINEAU-DESVOIDY.
55. Dorsocentral bristle just after or at the suture, being distinctly before the line connecting the anterior supra-alar bristles.
6. Scutellum almost always with 4 bristles.
7. Inferior fronto-orbital bristles 2.
8. Dorso-central bristle at the suture.
9. Eye-margins of face broad; proboscis moderately elongate and geniculate.
10. Antennal bases far apart from each other; frons about three times as wide as eye; wings very regularly spotted around the margin....  
.....*Campiglossa*, RONDANI.
- 10.10. Antennal bases near from each other; frons about twice as wide as eye; wings rather irregularly spotted.....  
..... *Paroxyna*, HENDEL.
99. Eye-margins narrow; proboscis normal, short and broad. ....*Tephritis*, LATREILLE.
88. Dorsocentral bristle distinctly behind the suture. ....  
..... *Paratephritis*, nov.
77. Inferior fronto-orbital bristles 3; eye-margins of face narrow; proboscis broad and short; dorsocentral bristle distinctly behind the suture but a little before the line connecting the anterior supra-alar bristles.....  
..... *Protephritis*, nov.

- 66. Scutellum almost always with 2 bristles, wanting the apical pair.
- 7. Abdomen densely greyish tomentose.
  - 8. Superior fronto-orbital bristles 2; proboscis very short.  
.....*Trypanea*, SCHRANK.
  - 88. Superior fronto-orbital bristles 1; proboscis more or less elongate, distinctly geniculate.....  
.....*Actinoptera*, RONDANI.
- 77. Abdomen shining, black, very slightly tomentose. ....  
.....*Spathulina*, RONDANI.
- 33. Head longer than high; the mouth-edge in profile always longer than the height of head. ....*Ensina*, ROBINEAU-DESVOIDY.
- 22.  $r_{4+5}$  distinctly bristled.
- 3. Vertical calli not extending forwards the upper inferior fronto-orbital bristle; superior fronto-orbital bristles only 2.
- 4. Upper superior fronto-orbital bristle directing inwards; squamulae of thorax much extending over that of the wings. ....  
.....*Xyphosia*, ROBINEAU-DESVOIDY.
- 44. Upper superior fronto-orbital bristle directing hidwards; squamulae of thorax a little longer than that of the wings.....*Icterica* LOEW.
- 33. Vertical calli very long, distinctly extending forwards the upper inferior fronto-orbital bristle; superior fronto-orbital more than 3.....  
.....*Noeëta*, ROBINEAU-DESVOIDY.
- 11. Wings distinctly incised at the ending of sc; anal cell more or less drawn out into a pointed lower angle; 1st posterior cell nearly parallel at the apical part; bristles of the head abnormal.....*Rhabdochaeta*, DE MEIJERE.

### LVIII. Genus **PSEUDORELLIA**, nov.

This is rather allied to the genus *Orellia*, ROB.-DESV., but chiefly differs from the latter in the morphology of head and in the venation of wings.

Genotype—*Pseudorellia nigrinotum*, sp. nov.

Head a little narrower than thorax, distinctly broader than height, about half as long as wide; frons about as wide as eye, slightly narrowed forwards, distinctly concave but at just before the lunula moderately convex and produced forwards; lunula not free, very small; vertex distinctly carinate, with the very narrow and moderately long vertical calli; face rather narrow, moderately broadened beneath, concave,

with the antennal grooves indistinct and very broad, and the eye-margins very narrow; epistoma moderate in width, rather perpendicular; back of the head moderately convex, in the upper area not concave, but more or less flattened; cheeks about  $\frac{1}{2}$  as high as eye, with a very narrow genal groove, with the mouth-edge strongly convex, and with the vibrissal-edge furnished with some very short black bristles. Eyes very sparsely pubescent, large, subtriangular, with the posterior margin slightly convex and the anterior margin right-angularily rounded, the upper angle being pointed and the lower angle rounded. Antennae inserted at just below the middle of eyes, not reaching to the upper mouth-edge; 3rd joint oval, about as long as  $1\frac{1}{2}$  times the 2nd, or a little longer than wide, with its tip rounded; arista nearly bare. Palpi small and narrow, gradually narrowed apically, indistinctly bristled; proboscis normal, rather small.

Mesonotum about as long as  $1\frac{1}{3}$  times the width, broadest in a little after the middle, strongly convex above, furnished with a fine pubescence; scutellum subtriangular, swollen above.

Abdomen about as long as thorax, rather narrow, bristly at the tip and the sides; 6th tergite of female distinctly longer than the 5th; basal joint of ovipositor rather short, depressed, trapezoidal, broader than long or about as long as the two preceding tergites together, very sparsely bristled.

Wings narrowed and rounded toward the tip, about  $2\frac{1}{2}$  times as long as wide, without distinct marginal spine, with the straight veins, of which m is slightly curved at the base of the apical section; stigma pointed, a little longer than half the second costal cell; anal cell as long as the 2nd basal cell, drawn out into a narrow and moderately long pointed lower angle; r-m distinctly before the middle of m, very slightly oblique, the lower end being near to the wing tip; m-cu nearly perpendicular, about twice as long as r-m;  $r_{1+5}$  not bristly, parallel with m at the apical part.

Legs comparatively long, normally bristled; middle tibiae with a single long spur.

Chaetotaxy complete: Ocellar bristles weak, parallel; fronto-

orbital 2:3, the upper superior one being shorter than the lower one and a little inwardly and very much hindwardly directed; inner vertical pair much longer than the outer pair; postvertical rather weak but about as long as the upper pair of superior fronto-orbital bristles, parallel, rather far apart from each other; genal very weak; bristles of occipital row moderately long, thin and sparse; dorsocentral 1, on the line connecting the anterior supra-alar bristles; notopleural 2; mesopleural 1; pteropleural and sternopleural 1, the both being shorter than mesopleural; scutellar 4, the apical pair very little shorter than the basal pair, crossed at the tip. All the bristles black.

Only one species from Formosa.

This genus may be naturally belonging to the subfamily *Trypetinae*, I took, however, it into the *Tephritinae* as it has long 6th tergite of female.

131. *Pseudorellia nigrinotum*, sp. nov.

(Fig. 76; Pl. XI, fig. 4.)

♀. Dark yellowish species, of small-sized. Frons brown, with a large elongate-subquadrate yellow patch on the anterior area with a fine dark longitudinal streak from the ocellar triangle to the posterior margin of the pale patch, furnished with a very few blackish pubescence; lunula pale yellow; vertex with a small blackish brown ocellar dot, and with the dark vertical calli which are sharply pointed and well-elevated; face nearly evenly yellowish white; back of the head pale reddish yellow, with a few black bristly hairs of the vibrissal edge. Antennae pale reddish brown; 3rd joint more or less whitish dusted toward the anterior base; arista black, with the base brown, very indistinctly microscopically pubescent; median seta of the second joint prominent, black, longer than the joint. Palpi pale reddish yellow, with a very few black bristly hairs; proboscis similarly coloured as in the palpi.

Mesonotum blackish castaneous, with the lateral and posterior margins broadly yellow, the coloration of the posterior margin being strongly prolonged forwards and of the lateral margins inwardly along

the hindside of the suture, whitish tomentose and sparsely black-pubescent, with three narrow non-tomentose blackish streaks in the blackish area, the lateral pair of which is entire, and the median one is brownish and is not reaching to the anterior margin of the yellow hind border; humeral calli distinctly yellow, with a very narrow black interno-posterior margin; pleurae and scutellum yellow; mesophragma blackish castaneous.

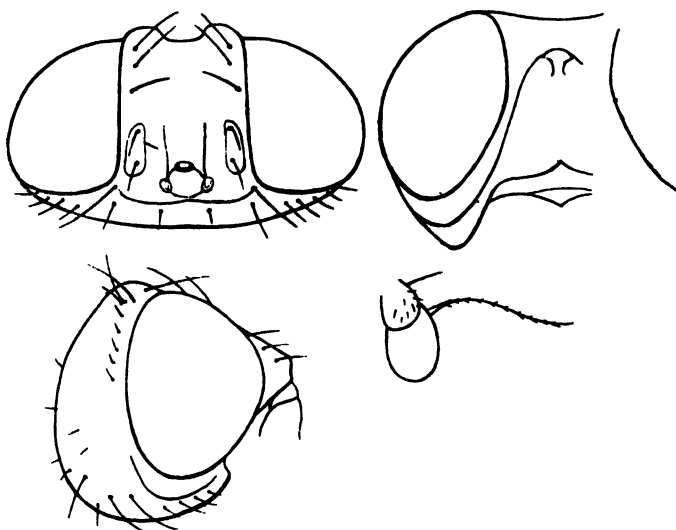


Fig. 76.

*Pseudorellia nigrinotum*, sp. n. ♀,  $\times$  ca 35.

Abdomen castaneous, black pubescent, with the broad lateral borders of the first two tergites, and with a dull yellow band on the posterior margin of each the 3rd-5th tergites; 6th tergite entirely yellowish; basal joint of ovipositor strongly shining blackish castaneous, black pubescent.

Wings glass-hyaline, with four brown bands as follows: Apical band, from the tip of  $R_1$  to the tip of  $IIM_2$ , broader than the others and distinctly notched toward the base on the veins; subapical band, on m-cu, extending forwards to the middle of the mouth of  $R_1$  and bending acutely along  $r_{1+5}$ ; median band, from the dark brown stigma into Cu, over through r-m, not reaching the posterior margin; basal



band, along the basal cross-veins, not distinct. Halteres and squamulae yellowish.

Legs pale yellowish, black bristled and pubescent.

Length: Body and wings 3 mm.

Only one female, collected in Formosa (Daisuikutsu, IX), preserved in the Entomological Museum of Government Research Institute, Taihoku, Formosa.

### LIX. Genus **CHAETOSTOMELLA**, HENDEL.

LINDNER. Fl. Palaearkt., 49, p. 124 (1927).

Genotype—*Trypeta onotrophes*, LOEW.

Head a little wider than thorax, much broader than high, about half as long as wide; frons flat, parallel-sided, wider than eye; lunula rather narrow; vertex more or less carinate, with the short well-developed vertical calli; face concave, very short, much shorter than frons, with the proportionally narrow antennal grooves and with the broad eye-margins, the latter being nearly the same in width throughout; back of the head rather strongly swollen, but on the upper area slightly; cheeks broad, about  $\frac{1}{3}$ – $\frac{1}{2}$  as high as eye, with a distinct but narrow genal groove; vibrissal edge very strongly bristled. Eyes rather small, about  $\frac{1}{2}$ – $\frac{2}{3}$  as wide as long, distinctly narrowed upwards, more or less angularly curved anteriorly. Antennae inserted distinctly below the middle of eyes, not reaching the upper mouth-edge; 3rd joint about twice as long as wide, with the upper and lower margins straight, its tip being more or less rounded; arista nearly bare from pubescence. Palpi rather short and straight, more or less bristly; proboscis very small.

Mesonotum subquadrate, a little longer than wide, very slightly convex above; scutellum rather long, subtriangular, distinctly swollen above.

Abdomen shorter than thorax, about as wide as the latter, broadest before the middle, conspicuously bristled toward the tip; 5th tergite of male distinctly longer than the two preceding ones together; 6th of

female distinctly longer than the 5th; basal joint of ovipositor depressed, much longer than wide, about as long as the three preceding tergites together; genitalia very small, but hypopygium more or less prominent.

Wings moderate in size, distinctly narrowed apically, with the two very short marginal spines; stigma pointed, about as long as  $\frac{2}{3}$  the second costal cell; anal cell about as long as the 2nd basal cell, drawn out into a short but narrow pointed lower angle;  $r_{2+3}$  straight;  $r_{1+5}$  very slightly undulate, entirely not bristled, nearly parallel with m, the latter being straight; r-m at the middle of  $IM_2$ , perpendicular and straight; m-cu not long, about twice as long as r-m, slightly convex outwards.

Legs moderate in length; front femora with a row of rather short but rather numerous bristles on the whole length of lower side; middle tibiae with a single spur; hind femora bristly near the tip, and with a row of very short bristles on the lower side; hind tibiae with a row of rather long bristles on the outer side.

Chaetotaxy complete: Ocellar bristles strong, divergent; fronto-orbital 2:3 or abnormally 2:4; inner vertical longer than outer pair; postvertical rather weak and short, yellowish; genal rather weak, 1-3, yellowish; bristles of occipital row distinct, just behind this row there is an another row of yellow bristles; prothorax yellowish-bristled; dorsocentral very near to the suture, distinctly before the line connecting the supra-alar bristles; notopleural 2; mesopleural more than 3, gradually shortened below; sterno- and ptero-pleural not very strong; scutellar 4, the apical pair being convergent.

#### Key to the Japanese Species.

1. 2nd and 3rd bands of wings connected together at the wing margin; eye-margins of face very broad..... *vibrissata*, COQUILLET.
11. 2nd and 3rd bands of wings not connected; eye-margins rather narrow.....  
..... *nigripunctata*, n. sp.

#### 132. *Chaetostomella vibrissata*, COQUILLET.

Proc. U. S. Nat. Mus. XXI., p. 338 (*Trypeta*) (1898).

♂ ♀. Ochraceous, rather large species, with 4 oblique yellowish bands of wings. Frons orange-yellow, furnished with a sparse brown

pubescence along the eye-margins; lunula well crescent-shaped, light waxy yellow; vertex with the shining pale yellow vertical calli, without blackish ocellar dot; face whitish yellow, with the orange-yellow eye-margins; back of the head yellow, furnished with many yellowish bristle-like hairs and with a few very short black pubescence in the middle of lateral swellings; cheeks yellow, with the genal groove somewhat reddish yellow, furnished with many short black pubescence all over the surface beneath the genal groove; vibrissal edge almost always with 6 black bristles, of which three anterior ones are very long and strong, being about twice as long as the remainings. Antennae orange-yellow; arista black, with the basal one-fifth yellowish, very sparsely microscopically pubescent; median seta of second joint prominent, black. Palpi dull orange-yellow, black bristly; proboscis darker than palpi.

Mesonotum ochraceous, densely covered with a stout yellow pubescence, with 5 indistinct narrow orange-yellow streaks, the median one of which extends from the front margin of the notum to the middle of postsutural disc, the submedian pair is entire through the whole length, and the lateral pair is appearing only in the postsutural disc. At the bases of each the dorsocentral and praescutellar bristles there is a round black dot, but the anterior pair is always smaller than the posterior one and is often obsolete; between the suture and the base of praesutural bristle there is an oblong black spot; in the space between the submedian and lateral orange-yellow streaks there is also a short but broad black streak, which is obsolete toward the suture and is pointed behind near to the hind margin. Pleurae paler than the notum, moderately shining, with two continuous black spots at the postero-superior base of wing; mesophragma pale reddish brown, with a blackish spot in the middle; scutellum yellow, moderately yellow-pubescent, with one apical and one pair of latero-basal black spots.

Abdomen ochraceous, black pubescent and bristled, on each the 2nd to 5th (♂) or 6th (♀) tergites there are two pairs of small black spots along the anterior margin; spots of the median pair are placed near from each other, while the lateral pair is very near to the extreme lateral side; 5th tergite of male with also one pair of black latero-

posterior spots; basal joint of ovipositor somewhat reddish, black pubescent; hypopygium orange-yellow, but genitalia blackish.

Wings hyaline, but very slightly whitish, with 4 pale yellowish brown oblique bands which are brown margined and are united together along the broad similarly coloured costal band; r-m in the middle of IM<sub>2</sub>. Basal band gradually narrowed and pointed posteriorly, its outer margin extending from the anterior tip of M to the apical end of an, and its inner margin from the base to the latter; median band, from the base of R<sub>3</sub> to the middle of the mouth of Cu, straight, slightly broadened at the middle and then slightly narrowed posteriorly; subapical band, from the middle of R<sub>1</sub> to the tip of cu, through over m-cu, slightly convex and distinctly narrowed posteriorly; apical band, along the costal margin, extending the tip of IIM<sub>2</sub>, its inner margin being very slightly concave. Along the costa there are very often two hyaline indentations, the first one of which is at the outside of the tip of stigma, and the second one is in the middle of the mouth of R<sub>1</sub>; these two indentations rarely becoming large, and the costal band is interrupted by them, in usual case being only once interrupted by the first or second indentation; in the base of R<sub>1</sub> and also in M with a small hyaline spot. Halteres paler yellow; squamulae greyish white.

Legs light yellow, black pubescent and bristled.

All the bristles black, excepting of the postvertical bristles yellowish white; genal bristle rarely pale coloured.

Length: Body 6-7.5 mm; wings 6.8-7 mm.

Hab. Japan—Gifu (VIII); Aizu (IX).

This species are usually known as a borer of *Arctium lappa* LINN. Types in the U.S. National Museum, Washington, D.C.

### 133. *Chaetostomella nigripunctata*, sp. nov.

(Fig. 77; Pl. XI, fig. 3.)

Allied to *vibrissata*, COQ., but at once distinguished by the short 3rd antennal joint, the black mesonotum and the interrupted costal band of wings.

♂ ♀. Dull reddish yellow species, of medium-sized. Frons a little longer than wide, orange-yellow, furnished with numerous black pubescence along the eye-margins; lunula light waxy yellow, with a narrow reddish upper margin; vertex with a small black ocellar dot which in

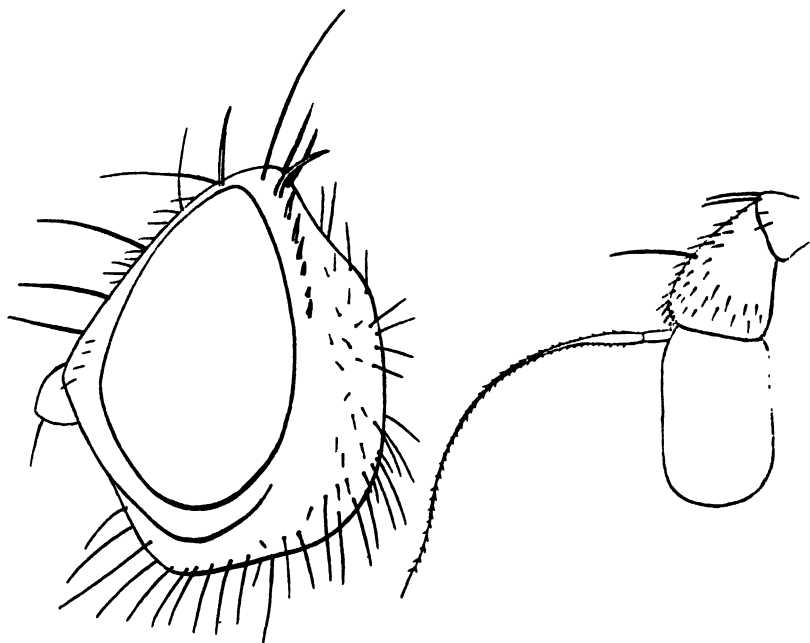


Fig. 77.

*Chaetostomella nigripunctata*, n. sp. ♀,  $\times$  ca 35. Antenna,  $\times$  ca 60.

paler specimens is obsolete, and with the strongly shining waxy yellow vertical calli; face whitish yellow, with the eye-margins more yellowish and the upper mouth-edge more or less orange-yellow; back of the head reddish yellow, but the lower half yellowish white, pubescent as in the preceding species; cheeks yellowish white, pubescent and bristled as in the preceding species. Eyes nearly perpendicular, with the anterior margin right-angularly rounded at the base of antennae, and with the posterior margin rather strongly curved outwards, the upper angle being more or less pointed and, the lower angle very broadly rounded. Antennae light yellow, with the 3rd joint often orange-yellow; 3rd joint

proportionally short, conspicuously shorter than twice the width, in male only a little longer than wide; arista and median seta as in *vibrissata* Coq. Palpi light yellow, furnished with a very few short black bristly hairs; proboscis orange-yellow.

Mesonotum black, with the broad yellow lateral and hind margins, dusted with a yellowish tomentum and covered with a dense stout yellow pubescence; the yellow lateral streak extending forwards to the interior margin of humeral callus and notched at the suture; the yellow hind marginal band with 3 same coloured anterior prolongations, the median one of which is short and subtriangular, and the remainings are narrow and extending to the middle of the postsutural disc; two pairs of non-tomentose black spots, one being at the base of dorsocentral bristles and larger one at the base of praescutellar. Pleurae pale reddish yellow, excepting of the sternopleural light yellow, with two black spots, the longer one of which is placed at the base of median coxa and the smaller one at the base of hind coxa; scutellum yellow or pale reddish yellow, with three blackish spots; the median apical one being large and extending near to the base, and the lateral one being small; postscutellum black, excepting of a large area beneath the squamulae light yellow.

Abdomen reddish yellow, black pubescent and bristled, black spotted as in *vibrissata*, but all the spots are more distinct; basal joint of ovipositor reddish brown, with the base broadly and the tip narrowly black; genitalia yellowish brown, with the dull yellow appendages; hypopygium light brown.

Wings hyaline, with 4 yellowish, brown-margined bands; r-m a little after the middle of  $IM_2$ . Apical band from the apical one-third the mouth of  $R_1$  to the tip of  $IIM_2$ , its inner margin being nearly straight; subapical band, on m-cu, nearly straightly extending anteriorly to the costal margin, very slightly convex, connected with the apical band on  $r_{2+3}$ ; median band from the stigma to just anterior the middle of the mouth of Cu, through over r-m, parallel with the subapical band; basal band, from the middle of second costal cell to the base of Cu, connecting with the median one at the base of stigma; at the base

there are two yellowish streaks, which are connecting with the basal band, the anterior one being in R and the posterior one in the anal cell; the extreme base and tip of  $R_1$  more or less hyaline. Halteres and squamulae light yellow.

Legs light yellow, black pubescent and bristled; all the femora proportionally stout.

Chaetotaxy as in *vibrissata*, COQ.

Length: Body 4.5–6 mm, wings 5–5.5 mm.

Hab. Formosa—Musha (V); Roeichi (IX); Horisha (V); Kanko (X); Niitaka-prefecture (VII).

Types in the Entomological Museum of Government Research Institute, Taihoku, Formosa.

#### LX. Genus **PLATENSINA**, ENDERLEIN.

Zool. Jahrb. XXXI., p. 453 (1911).

*Tephrostola*, BEZZI, Memoirs of the Indian Museum, III., no. 3, p. 153, 1913.

Easily distinguished by the large, hyaline-dotted black wings.

Genotype—*Platensina sumbana*, ENDERLEIN.

Head distinctly broader than high, a little broader than or as wide as thorax, or about half as long as wide; frons longer than face, or broader than eye, very little narrowed forwards; lunula small but distinct, semicircular; vertex distinctly carinate, with the medium-sized vertical calli which are hardly reaching the middle of frons; face moderately concave, proportionally narrow and slightly broadened beneath, with a rather distinct narrow longitudinal median carina, with the antennal grooves comparatively broad and deep, and the eye-margins very narrow and nearly the same in width throughout the whole length; epistoma distinct, but horizontal; back of the head distinctly concave above and distinctly swollen below; cheeks rather linear, but the posterior area strongly swollen behind, with a very fine genal groove which is not extending above to the face; vibrissal-edge with very short fine bristles. Eyes rather large, very slightly broader than half the length.

with the posterior margin slightly convex and the anterior margin strongly convex, the upper angle being narrower than the lower. Antennae inserted at the middle of eyes, very short, reaching below to the middle of face; 3rd joint a little longer than wide or the 2nd joint, distinctly rounded at the tip; arista pubescent. Palpi broad and short, about  $1\frac{1}{2}$  times as long as wide, rounded at the tip, distinctly bristled; proboscis broad and short.

Mesonotum rather rounded, a little longer than wide, broadest behind the middle, strongly convex above, covered with a strong but short and oblique yellow pubescence; scutellum moderate in size, subtriangular, more or less flattened above, not pubescent, excepting the lateral margins.

Abdomen about as long as thorax, rather narrow, almost always narrower than thorax, shortly bristled at the tip and the lateral margins; 5th tergite of male comparatively short, about  $1\frac{1}{2}$  times as long as the preceding one; 6th of female usually a little longer than the 5th; genitalia very small, not conspicuous; ovipositor depressed, about as long as the 3 preceding tergites together, its basal joint being long-triangular and about as long as the 5th and 6th tergites together or longer than wide.

Wings very broad, almost always longer than body, with 2 long marginal spines, and with straight veins; stigma large, but shorter than the second costal cell, pointed; anal cell distinctly shorter than the 2nd basal cell, with the lower angle broad and pointed;  $r_{1+2}$  bare;  $r-m$  distinctly after the middle of  $IM_2$ , oblique, the posterior end being near to the wing-tip;  $m-cu$  rather long, more than twice  $r-m$ , more or less oblique, parallel or not with  $r-m$ , with the lower angle of  $IM_2$  more or less pointed.

Legs rather narrow and moderate in length; front femora with a row of very few long bristles on the lower side; middle tibiae with a long spur; 4 posterior tibiae with a row of distinct bristles on the outer side.

Chaetotaxy complete: Ocellar bristles strong; fronto-orbital 2:3; inner vertical very much longer than the outer pair which is yellowish;



genal strong; bristles of occipital row strong and yellowish; postvertical parallel, with the inner occipital pair equal in the length; dorsocentral 1, near the suture, distinctly before the line connecting the anterior supra-alar bristles; noto- and mesopleural 2; sterno- and pteropleural 1, rather strong; scutellar 4, the apical pair being distinctly shorter than the basal pair and crossed.

Two species from Formosa are distinguished as follows:

1. Apex of halteres black; wings with an apical white spot in  $R_5$ , and with many white dots.....*platyptera*, HENDEL.
11. Apex of halteres yellow; wings with an apical white spot distinctly extending beyond  $r_{4+5}$  and  $m$  along the margin, and with fewer white dots. ....  
.....*apicalis*, HENDEL.

#### 134. *Platensina apicalis*, HENDEL.

Ann. Mus. Nat. Hung. XIII., p. 462 (1915).

♀. Head broader than the thorax, about as long as a half the width. Frons rather broad, broader than eye, nearly parallel-sided, flat, reddish brown, with the greyish tomentose lateral margins and somewhat covered with a cinereous pulverulence excepting of the nearly entire middle part; lunula rather small, distinctly covered with a greyish tomentum, inferior fronto-orbital bristles blackish brown and 3, the upper one of which is about twice as long as the lower one and the middle is a little shorter than the upper one; superior fronto-orbital bristles blackish brown, stouter than the inferior, strongly curved, the upper one of which is about the same in length to the middle inferior fronto-orbital bristle, and the remaining one is longer than the upper inferior fronto-orbital bristle; the inner pair of the vertical bristles dark brown, stouter than and about twice as long as the lower superior fronto-orbital bristle, while the outer pair is pale yellowish and is about half as long as the inner pair; ocellar bristles rather long and thin, blackish brown with the base pale, about as long as the lower superior fronto-orbital bristle; postvertical and occipital bristles pale yellow and rather strong, the former pair divergent, and the latter ones heterogenous

in length. Face longer than wide, a little narrower than the frons but the lower part as broad as it, pale yellowish, entirely but slightly covered with a silvery white tomentum, on the lower half with an indistinct very fine blackish pubescence. Cheeks rather small, with a yellowish genal bristle which is nearly as long as the postvertical bristle and has the black basal portion; pubescence black and very few. Vertex flat and greyish black. Back of the head slightly swollen, yellowish, entirely covered with a greyish white dust, on the eye-margins with a row of very short, fine and black bristle-like hairs, on the lower part behind the cheek with a few long pale bristle-like hairs. Compound eyes when viewed from the side oval, about as high as  $1\frac{1}{2}$  times the broad, with the hind margin slightly curved and with the fore margin strongly, the both ends being rounded; ocelli yellowish but its triangle is blackish. Antennae brownish yellow, very short, much shorter than the face; first joint very short and very small, on the apical margin with a row of very tiny black bristle-like pubescence; second much large than the first, nearly triangle when viewed from the outside, prominent above and bearing some minute black bristles; third joint longer than the two basal joints together, rather elliptical with the rounded apex, nearly as long as twice the width, somewhat paler than the others; arista on a prominent tubercle at the dorsal base, dark brown, but the basal third pale, nearly twice as long as antennae, on the both sides with short and blackish pubescence. Proboscis rather thick, much shorter than the height of the head, pale reddish yellow, with the pale yellowish but black-hairy palpi which are a little shorter than proboscis.

Mesonotum about as long as  $1\frac{1}{2}$  times the width, a little broadened hindwards, distinctly convex, covered with a dense greyish yellow dust and with a rather thick, adpressed, pale yellowish pubescence, on the frontal border of the disc bearing a few short minute pale bristles but there is no distinct scapular bristles; dorsocentral, praescutellar and supra-alar bristles very long and brown, the latter being only two-pairs; praesutural, humeral and notopleural bristles shorter than the others on disc and brown, the former being longest and the second shortest.

Pleurae reddish, covering with a dense greyish dust, with the three pairs of pleural-bristles brown and nearly as long as the praesutural bristles. Scutellum broad, about twice as wide as long, with the hind margin slightly pointed in the middle, and with the disc in coloring the same to the notum; the basal bristles brown, very long, nearly as long as the thorax; the apical bristles broken. Mesophragma shining black.

Abdomen moderately long, gradually narrowed hindwards, shining black, with the yellowish red basal portion; the pubescence very fine and yellowish, but on the hind border of each the tergites with a number of distinct long black bristly hairs; the ventre on the basal half orange yellow; ovipositor very long and shining black.

Wings very broad, a little longer than the body, black with some white dots and a few white indentations as follows: Second costal cell with two small indentations;  $R_1$  with two large indentations just after the stigma, of which the basal one is much larger than the following one and extends hindwards to  $r_{1+5}$ ; a large apical spot, in  $R_3$ , extending over  $r_{1+5}$  and  $m$ ;  $Cu$  with two indentations in the middle, the smaller one being at the end of  $an$ . Eight dots: One near the base of  $R_1$ ; one in  $IIM_2$  at the end of  $cu$ ; one in  $IM_2$  near the middle; 3 in  $Cu$ , two at the base and the remaining one near the middle; one in the second basal cell, near the tip; one in the axillary lobe. Squamulae brownish, on the margin bearing a pale fringe; halteres pale yellowish brown.

Legs pale yellowish brown, with a distinct black pubescence; front femora on the externo-inferior margin with 4 rather long blackish bristles and on the dorsal surface of the apical half with a few short black bristles; front coxa near the apex of the dorsal surface bearing a single rather long pale bristle, middle and hind coxae bearing a row of rather strong pale bristles near the apical margin, a long same coloured bristle on the outer margin of the hind-coxa; hind-tibiae at the apex of the outer margin with a strong long black bristle.

Length: Body 4.5 mm; wings 5 mm.

Hab. Formosa—Shu-Shu (V).

This species, at the present, has only one female collected by Mr. H. SAUTER, which is rather incomplete specimen, being broken the right wing, and is preserved in Hungarian National Museum in Budapest. The above description is from the Type.

135. *Platensina platyptera*, HENDEL.

Ann. Mus. Nat. Hung. XIII., p. 461, pl. IX, fig. 17 (1915).

Mainly differs from the preceding species in the wing-pattern.

♂ ♀. Dull ochreous species, of rather small-sided, with blackish abdomen and wings, the latter having many small whitish dots. Frons a little longer than wide, orange-yellow, somewhat white dusted towards the antero-lateral borders, very sparsely brownish pubescent; lunula greyish white, with the narrow reddish hind margin; vertex with an ill-defined brown ocellar dot, and with the straight waxy dull coloured vertical calli; face yellow to pale yellowish brown; back of the head greyish yellow, somewhat darkened above and more or less palened below; cheeks yellow, distinctly dusted with a snow-white tomentum, furnished with many short black bristly hairs along the vibrissal edge. Antennae yellow to reddish yellow; 3rd joint sparsely short-pubescent; arista black, with the base often brown, black pubescent; median seta of the second joint conspicuous. Palpi orange-yellow; proboscis pale brownish yellow.

Mesonotum dark coloured, densely covered with a greyish yellow tomentum and with a stout yellow pubescence; pleurae reddish yellow, covered with a greyish yellow tomentum but bare from yellow pubescence; scutellum paler than mesonotum; mesophragma black, slightly covered with a greyish yellow tomentum; in the male always darker than in the female.

Abdomen shining dark castaneous, more or less palened toward the base, very slightly covered with a yellowish grey tomentum and furnished with many black pubescence; basal joint of ovipositor shining black, black pubescent, as long as the three preceding tergites together;

genitalia almost concealed in the blackish hypopygium, with the yellowish brown appendages.

Wings blackish, with the extreme base more or less hyaline; r-m parallel with m-cu. Whitish spots as follows: Fifteen spots along the entire margin; two in the second costal cell, the basal one of which is conspicuously larger than the apical one and extends hindwards to rs; one near the base of stigma very slightly smoked; three, along the mouth of  $R_1$ , very irregular in shape, in the male all being rounded, but in the female two basal ones being long and reaching just behind to  $r_{2+3}$  and the far apart apical one being rounded, while in a male the basal one is only conspicuous and two other very small ones are placed in the cell not along the costal margin; a rounded spot, in the middle of the mouth of  $R_3$ , hardly touching the margin; a large apical spot, in  $R_5$ , never extending over  $r_{4+5}$  or m; two rounded spots in  $IIM_2$ , wide apart from each other; three, in Cu, also rounded and wide apart; two, in the axillary lobe, almost always not touching the margin. Many rounded spots scattered all over the surface except for the margin; one at just the base of  $R_1$ , in the male an another smaller one at just behind the basal indentation of this cell; 4 (♀) or 5 (♂) in  $R_2$ , of which two first ones are just behind the indentations of  $R_1$  respectively, and 2 or 3 remainings are placed towards the apical border of the cell and strongly smoked; 3 in  $R_4$ , the proximal one being nearly above m-cu and the two distal ones strongly smoked; one, in  $IIM_2$ , near the antero-basal corner; one in R distinct, but in the male two and smoked; two, in  $IM_2$ , very conspicuous, far apart from each other; 4 (♀) or 5 (♂), in Cu, of which two are placed towards the base, one being at the extreme base and almost always very obsolete, while the remainings are placed in the middle of the cell. Halteres and squamulae light dirty yellow, the knob of the former being blackish.

Legs reddish yellow to pale reddish brown, black pubescent and bristled.

All the bristles black, excepting of the postvertical bristles and of the main stout bristles of occipital row pale yellowish.

Length: Body 4-5.2 mm; wings 4.2-5.5 mm.

Hab. Formosa—Taihorin (VII); Taiheisan (VIII); Kappansan (IX);  
Shinchiku (VII); Arisan (X); Namakaban (IX).

Type of female in the National Museum of Hungary, Budapest; of male in the Entomological Museum of Government Research Institute, Taihoku, Formosa.

# LXI. Genus **ELAPHROMYIA**, BIGOT.

Rev. Mag. Zool. VII., p. 10 (1859).

*Mesanopin*, ENDERLEIN, Zool. Jahrb., Abt. Systematik, XXXIII., p. 369 (1912).

*Paralleloptera*, BEZZI, Memoirs of the Indian Museum, III., no. 3, p. 155 (1913).

A very peculiar one on account of the shape and pattern of wings, and of the slender body and legs.

Genotype—*Trypeta ulula*, LOEW.

Head very slightly narrower than or about as wide as thorax, or a little broader than high, or about half as long as wide; frons about as long as face, narrow and about as wide as eye, narrowed forwards, with the lateral margins more or less elevated; lunula very small, not elevated; vertex more or less carinate, with the distinct rather long vertical calli, which are a little longer than a half the frons; face narrow, slightly broadened beneath, concave, without median carina, with the straight upper mouth-edge, with the antennal grooves indistinct, and with the eye-margins very narrow but distinctly broadened beneath; epistoma not elevated; back of the head slightly concave, but the lower portion more or less swollen; cheeks linear, with the vibrissal-edge distinct and rather long bristly, without distinct genal groove. Eyes large, oblong, moderately narrowed upwards, with the posterior margin slightly convex. Antennae inserted just below the middle of eyes, not reaching below to the upper mouth-edge; 3rd joint about  $1\frac{1}{2}$  times as long as wide or the 2nd joint, with the upper margin very slightly concave or straight or very slightly convex, its tip being more or less angulate at the upper end or distinctly rounded; arista pubescent. Palpi small, not broad, distinctly bristly, sometimes very conspicuously; proboscis short.

Mesonotum a little longer than wide, strongly convex above, densely covered with a tomentum and with a rather sparse fine pubescence; scutellum broad, comparatively large, more or less flattened above.

Abdomen elongate, about as long as thorax, a little narrower than the latter, not bristled, but the hind margin of each the tergites with a few long hairs; 5th tergite of male a little shorter than the two preceding ones together; 6th of female very slightly longer than the 5th; genitalia prominent, with a pair of short rounded appendages; hypopygium rather small but distinctly produced behind the 5th tergite; ovipositor depressed, very elongate.

Wings dark brown, with numerous small subhyaline dots all over the surface, very narrow and long, nearly parallel-sided, the tip being evenly rounded, with the two costal spines, of which the upper one is somewhat shorter than the other, and with the veins distinctly straight; stigma a little shorter than the second costal cell, gradually narrowed apically and moderately pointed; anal cell a little shorter than the 2nd basal cell, with the lower angle more or less pointed but not produced; r-m and m-cu perpendicular, the former being distinctly after the middle of  $IM_2$ , and the latter  $1\frac{1}{2}$ -2 times as long as r-m, in the case that is longer very slightly oblique and the lower angle of  $IM_2$  is more or less pointed;  $r_{4+5}$  bare, parallel with m.

Legs narrow, bristled as usual; middle tibiae with a single very long spur.

Chaetotaxy complete: Ocellar bristle strong, divergent, rather far apart from each other at the base; fronto-orbital 2:3, the superior pairs directing outwards and strongly hindwards; inner vertical very much longer than the outer pair; genal well-developed; postvertical strong, divergent, yellowish; bristles of occipital row stout, yellowish; outer vertical and inner occipital bristles also yellowish; dorsocentral 1, near the suture and a little before the line connecting the anterior supra-alar bristles; noto- and mesoplural 2; sterno- and pteropleural very strong; scutellar 4, the apical pair being very short and crossed.

## Key to all the species known to me.

1.  $R_1$  with 5 or 6 subhyaline spots along the margin, very rarely only 4, in the latter case they are not equidistant; each the two last tergites with one distinct rounded blackish median spots.
  2. Palpi furnished with a few bristles..... *pterocallaeformis*, BEZZI.
  22. Palpi furnished with black brush-like bristles. .... *multisetosa*, sp. nov.
11.  $R_1$  with 3 or 4 subhyaline spots.
  2. Last tergite with two blackish spots..... *incompleta*, sp. nov.
  22. Tergites without any blackish spots..... *adatha*, WALKER.

136. *Elaphromyia pterocallaeformis*, BEZZI.

Memoirs of the Indian Museum, III., no. 3, p. 155, pl. X, fig. 58 (1913).

Very near *Elaphromyia adatha*, but at once distinguished by having four blackish spots in the two last tergites and more numerous subhyaline spots in the wings.

♂ ♀. Frons distinctly narrowed forwards, with the lateral margins distinctly elevated, yellow; lunula distinctly whitish; vertex with an ill-defined brownish ocellar dot; face more or less whitish, with the eye-margins light yellow; back of the head dull yellow, becoming whitish yellow toward the lateral swellings, on the lower half there are rather many pale bristle-like hairs; cheeks pale yellow, with many yellowish, black-tipped, bristly hairs along the vibrissal edge. Antennae orange yellow; 3rd joint with the upper margin very slightly concave but straight in the male, distinctly pale pubescent; arista black, with the base yellow, black pubescent; 2nd joint yellow and black bristly, with a very short black median seta. Palpi yellow, sparsely black bristly; proboscis yellow.

Mesonotum blackish but entirely obscured by a dense cinereous tomentum, covered with many short black pubescence, with 3 brown longitudinal stripes in the middle, which are not extending to the hind margin, the median one being more distinct but paler, and with the base of each the bristles black; humeral calli and pleurae yellow; scutellum yellow, with a black spot at each the bases of bristles.

Abdomen yellow to pale reddish yellow, slightly shining, pale pu-



bescent; each the two last tergites with a pair of blackish spots, those on the last tergite being almost always larger; basal joint of ovipositor shining, reddish brown, furnished with a few short pubescence, as long as the three preceding tergites together; genitalia reddish yellow.

Wings nearly evenly dark brown, the axillary lobe and the hind half of Cu being whitish- or cinereous-hyaline in the shape of a streak extending from the base of wing to the end of cu; costal margin with 11-12 whitish or yellowish subhyaline spots, of which two in the stigma and in the second costal cell are constant in number, the former being almost always much hyaline and whitish; one in the first costal cell almost always large, but ill-defined; 5 or 6 in  $R_1$  usually whitish but often yellowish; the remaining one, in  $R_3$ , very small but distinct, placed at the tip of  $r_{2+3}$ . The other numerous dots, always yellowish, disposed in regular rows, one being in  $R_1$  and two in each the other cells. Along the hind margin there is a row of 8 larger whitish-hyaline spots, two very faint ones being in the axillary lobe, three larger in Cu and the remainings in  $IIM_2$ . Halteres and squamulae pale brown.

Legs yellow, brownish pubescent and yellowish bristled, with a yellow median spur.

All the bristles yellowish brownish, but of the occipital row whitish yellow intermixed with many short black bristles.

Length: Body 3.5-4.5 mm; wings 4-4.5 mm.

Hab. Formosa—Tainan; Takao (IV, V); Kankau; Tauran (IV); Taihoku (V); Taiko (II).

India—Dharampur (Simla Hills); Bhowali (Kumaon).

Type of female in the Indian Museum, Calcutta.

137. *Elaphromyia multisetosa*, sp. nov.

(Fig. 78; Pl. XI, fig. 5.)

Very closely allied to the preceding species, but distinctly differs in the palpi which are densely furnished with numerous black bristles along the apical half of the under margin.

♂ ♀. Frons a little narrower than eye, nearly parallel-sided.

orange-yellow, with the broad lateral borders snow-white tomentose, in the middle with an ill-defined but rather deep, anteriorly convex, transverse sulcus just front the tip of vertical calli, along the eye-margins there are a very few short brown hairs; lunula distinctly snow-white tomentose; vertex with a blackish brown ocellar dot, with the vertical calli light waxy yellow; more or less dusted, with the yellowish white eye-margins; back of the head orange-yellow, but the median and lateral portions whitish, with some long yellowish bristles and short black hairs; cheeks whitish yellow, in the area beneath the genal groove with many very short black hairs toward the face, but along the vibrissal edge there are a very few black bristles. Antennae orange-yellow, becoming whitish toward the inner surface; 3rd joint proportionally short, its upper margin straight and its under margin strongly convex, covered with numerous whitish pubescence; arista black, with the basal third reddish yellow, microscopically pubescent; 2nd joint short and black bristled, the median seta being indistinct. Palpi whitish yellow; at the apex short and black bristly, and in the female along the under margin with a black brush-like bundle of bristles excepting for the basal part, but in the male with sparse blackish bristly hairs; proboscis yellow, proportionally large.

Thorax as in the preceding species, but scutellum proportionally short and pleurae always greyish brown.

Abdomen also as in the preceding species, but the pubescence a little darker; basal joint of ovipositor very pale reddish yellow, proportionally short; genitalia reddish yellow, with the dorsal base deep black.

Wings as in the preceding species, but the subhyaline dots are almost always more well-defined, and are proportionally small and distinctly rounded; stigma often with only one costal subhyaline spot; Cu rarely with only two marginal spots; axillary lobe with more or less distinct marginal hyaline spots, which are more reduced in the preceding species. Halteres orange-yellow; squamulae dull brown.

Legs pale yellow to very pale yellowish brown, brown pubescent and yellowish bristled.

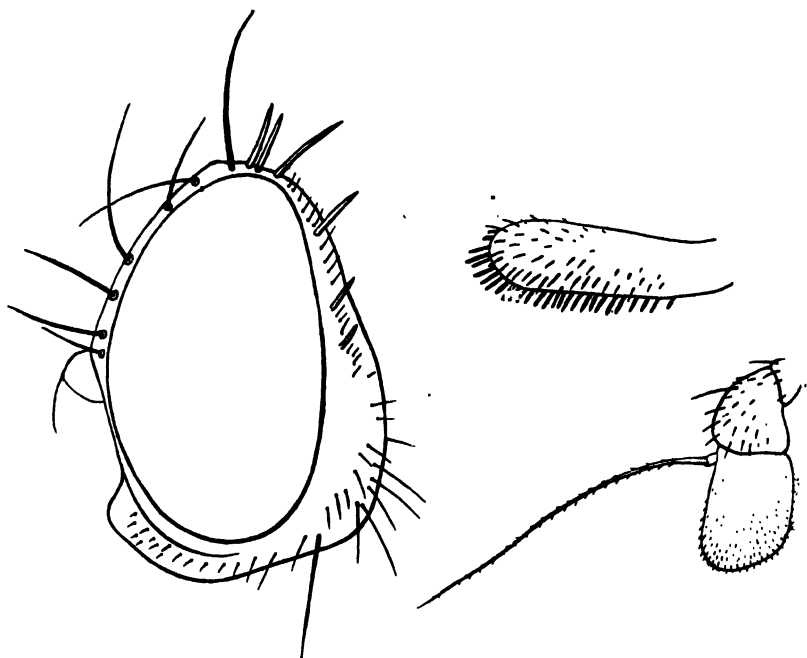


Fig. 78.

*Elaphromyia multisetosa*, n. sp. ♀, × ca 50. Antenna and palpus, × ca 60.

All the bristles brown to dark brown, excepting of postvertical bristles and macrobristles of occipital row whitish.

Length: Body 4–5 mm; wings 4.5–5.2 mm.

Hab. Formosa—Rikiriki (III); Shinchiku (VII).

Types in the Entomological Museum of Government Research Institute, Taihoku, Formosa.

138. *Elaphromyia incompleta*, sp. nov.

(Fig. 79; Pl. XI, fig. 6.)

At once distinguished from the two preceding species by having only two blackish spots in the abdominal tergites and very irregular subhyaline dots in the wings.

♂. Frons yellow, with the broad lateral borders waxy yellow and more or less greyish tomentose, in the middle distinctly hollowed;

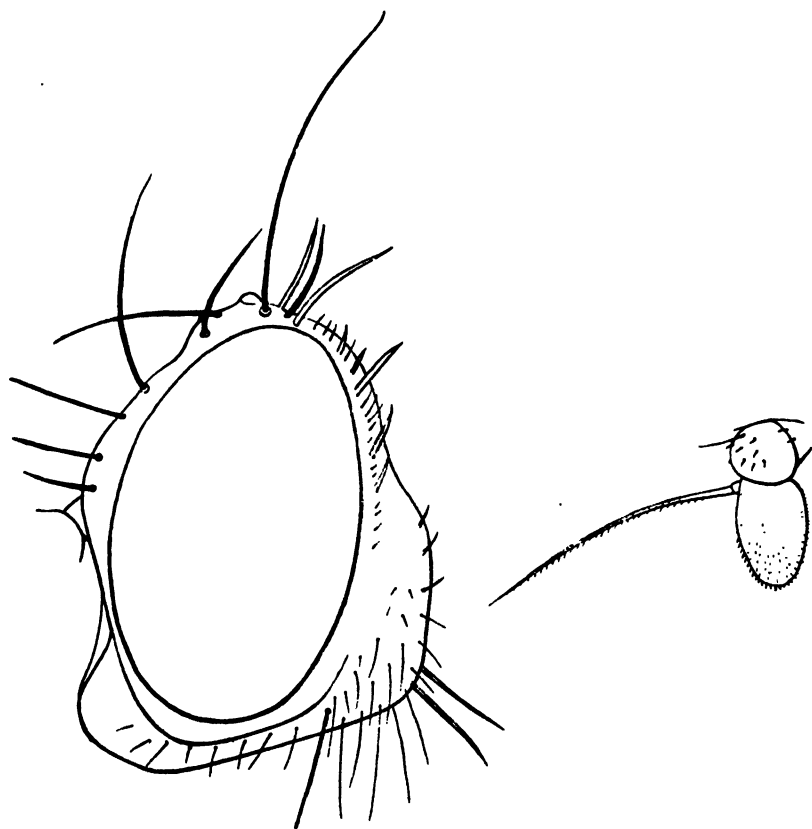


Fig. 79.

*Elaphromyia incompleta*, n. sp. ♂, × ca 60.

lunula somewhat whitish; vertex well elevated, with a blackish ocellar spot, and with the waxy yellow vertical calli; face pale reddish yellow; back of the head blackish, but becoming pale yellowish toward the eye-margins and the lateral swellings, furnished with some pale yellowish bristly hairs at the lower portion but toward the eye-margin there is a few black pubescence; cheeks light yellow, with some short brown bristles of vibrissal edge, and with many shorter and paler hairs forwards. Antennae pale yellow; 3rd joint distinctly pale pubescent, with its apex narrowly rounded as in the male of *multisetosa*; arista black, with the basal fourth yellowish; second joint furnish with many

short black bristly hairs which are intermixed by a few yellowish brown ones, the median seta being not conspicuous. Palpi yellow, furnished with many short black bristly hairs toward the apex; proboscis pale reddish yellow.

Thorax as in *pterocallaeformis*, but the scutellum as in *multisetosa*.

Abdomen shining, light yellow, somewhat reddish toward the apex; 5th tergite with two blackish brown median spots; genitalia very pale reddish yellow, with a short castaneous basal band on the dorsum.

Wings proportionally short; spots along the costal margin as in *pterocallaeformis*, but in  $R_1$  there are always four and they are almost always equidistant; spots in the median surface always irregular and not formed regular rows. Halteres pale reddish yellow; squamulae brownish.

Legs light yellow, brownish pubescent and yellowish bristly, comparatively shorter than those in *multisetosa*.

All the bristles as in *multisetosa*.

Length: Body 4 mm; wings 4 mm.

Hab. Okinawa—Yayeyama (IX).

Type in the Entomological Museum of Government Research Institute, Taihoku, Formosa.

## LXII. Genus *SPHENELLA*, ROBINEAU-DESVOIDY.

Essai sur les Myodaires, p. 773 (1830).

*Sineura*, LIOY, Att. Ist. Ven. 3<sup>a</sup>, IX., p. 1024 (1864).

Genotype—*Tephritis marginata*, FALLÉN.

Head broader than high, or about as wide as thorax, or a little longer than half the width; frons a little longer than face, flattened, distinctly broader than eye, narrowed forwards with the eye-margins distinctly pubescent; lunula moderate in size; vertex more or less carinate, with the very short elliptical vertical calli; face strongly concave, with the upper mouth-edge being distinctly produced forwards, with the antennal grooves rather indistinct, and with the eye-margins

moderate in width, nearly the same in width throughout the whole length; back of the head swollen behind, but the upper area more or less flattened; cheeks moderate in width, about as wide as the 3rd antennal joint, with the very narrow but distinct genal groove, the vibrissal-edge being more or less bristly. Eyes proportionally large, about twice as long as wide, with the posterior margin slightly curved, the upper angle being a little narrower than the lower angle. Antennae inserted just below the middle of eyes, hardly extending below to the upper mouth-edge; 3rd joint about  $1\frac{1}{2}$  times as long as wide, with the upper margin straight, its tip being rounded but at the upper end more or less angulate; arista very short pubescent. Palpi short, somewhat curved upwards, more or less bristly; proboscis elongate and distinctly geniculate.

Mesonotum subquadrate, about as wide as long, distinctly convex, broadest just behind the middle, densely covered with a tomentum and a strong but very short pubescence; scutellum rather long, subtriangular, flattened above, more or less pubescent.

Mesonotum subquadrate, about as wide as long, distinctly convex, broadest just behind the middle, densely covered with a tomentum and a strong but very short pubescence; scutellum rather long, subtriangular, flattened above, more or less pubescent.

Abdomen about as long as or a little longer than the thorax, broadest near the base, bristly at the tip and the lateral margins; 5th tergite of male very slightly shorter than the two preceding ones together; 6th of female as long as the 5th; genitalia not prominent; ovipositor very short, depressed, with the basal joint trapezoidal, about  $1\frac{2}{3}$  times as long as the 6th tergite and distinctly pubescent in the basal half.

Wings usual in shape, with a distinct costal spine, with a broad dark coloured median cross-band;  $r_1$  ending before r-m;  $r_{2+3}$  more or less wavy;  $r_{4+5}$  bare, parallel with m; r-m apart from m-cu in a distance less than its own length, perpendicular; m-cu more or less convex; inferior angle of the anal cell drawn out into a short and broad point, as long as the second basal cell.

Legs strong and rather long, bristly as usual, the middle tibiae with a single rather short spur.

Chaetotaxy complete: Ocellar strong, divergent; fronto-orbital 2:2, the upper superior pair being yellowish; inner vertical very much longer than the yellowish outer pair; postvertical much longer than the inner occipital bristle, very slightly divergent at the tip; genal moderate in length; bristles of occipital row strong, yellow; dorsocentral rather near the suture, at just before the line connecting the anterior supra-alar bristles; mesopleural only one, but there are some moderately strong yellowish bristles; pteropleural very strong, in the disc there are some yellowish bristles; scutellar 4, the apical pair being very little shorter than the basal pair and almost always crossed.

Only one species found in Formosa.

139. *Sphenella indica*, SCHINER.

Dipt. Novara Reise, p. 267 (1868).

Very closely allied to the European *marginata*, but distinguished by the darker and broader pattern of wing.

♂ ♀. Dark coloured species, of small-sized, with the whitish hyaline brown-banded wings. Frons yellowish white to light orange yellow, palened toward the vertex and lateral margins, along the eye-margins yellowish pubescent, and in the middle furnished with a very few, short, erect, obtusely pointed, yellowish bristly hairs; lunula whitish; vertex with a small blackish ocellar dot which is almost always placed at the posterior half the rather elongate ocellar triangle, and with the light waxy yellow vertical calli; face light waxy yellow to pale reddish yellow; back of the head yellow to greyish brown, with the lateral swellings always pale yellow to yellow and furnished with many yellowish bristly hairs; cheeks yellowish white to pale yellow, with short black bristly hairs of vibrissal edge. Antennae almost always orange-yellow; 3rd joint covered with a very short pale pubescence arista black, with the basal fourth reddish brown; 2nd joint furnished with many very short black bristles, without distinct median seta.

Palpi yellow to orange-yellow, furnished with a few short black bristles at the tip and with a few a little longer yellowish bristly hairs along the basal half the under margin; proboscis yellow to orange-yellow, a little shorter than the height of head, the apical portion being as long as the stem.

Mesonotum black, entirely obscured by a dense greyish orange-yellow tomentum and covered with numerous short yellowish bristly hairs; humeral calli, pleurae and scutellum yellow, covered with a dense greyish yellow tomentum and many sparse yellowish bristly hairs which are longer than those on the notum; postscutellum blackish, densely covered with a greyish yellow tomentum.

Abdomen blackish brown, covered with a greyish yellow tomentum and numerous short yellowish bristly hairs, at the posterior border of the apical tergite there are some long blackish bristly hairs which are yellowish at the base; each the tergites with yellowish hind marginal band, the latter on the apical tergite being distinctly broader than the precedings; basal joint of ovipositor shining, black, furnished with numerous black hairs which are intermixed with some yellowish bristly hairs at the basal half; genitalia reddish brown to dark brown.

Wings whitish, with broad short costal streak, broad entire median cross-band and broad apical band dark brown; costal streak, from the base to the tip of stigma, extending behind to  $r_{2+}$ ; but at the basal half to m, paler than the cross-band excepting of the stigma and of the second costal cell, with two yellowish hyaline indentations in the second costal cell, of which the apical one is extending to the base of stigma and also to  $r_{2+3}$ ; often with an indistinct small brownish hyaline spot near the tip of stigma<sup>(17)</sup>; median cross band, through over r-m and m-cu, united with the costal streak at the apex of the stigma, nearly the same width throughout, with 2 to 7 yellowish hyaline spots at the anterior half, the largest and conspicuous one of these spots being placed at just after the stigma and being very constant; apical band,

(17) In BEZZI's description the stigma has no spot, but in many Formosan species has a trace of spot; the wing-pattern is more well agreed to SCHINER's description than to the former's.



extending from the apical third the mouth of  $R_1$  to the apical half the  $1M$ , with a row of two or three subhyaline spots from the front tip of  $R_3$  to the middle of  $R_1$ , the posterior one of these spots becomes almost always very large and is united with the hyaline band between the median and apical bands; Cu at the basal half with 3 small ill-defined brown spots, the interno-inferior one of which is larger and is extending behind into the axillary lobe. Halteres pale yellowish; squamulae white.

Legs pale reddish yellow to pale reddish brown, dark brown pubescent and yellowish brown bristly.

All the bristles black, excepting of the vertical, postvertical, sternopleural and pteropleural bristles and the bristles of occipital row whitish.

Length: Body 4–4.5 mm; wings 3.8–4.1 mm.

Hab. Formosa—Taïhoku (V, XI); Tabani; Kanshirei (IV); Tainan (II); Takao (V); Bosan (XI); Koshun (IV, V); Taito (II, III); Kotosho (III).

India.

### LXIII. Genus **PAROXYNA** HENDEL.

LINDNER, Fl. Palaearkt., 49, p. 146 (1927).

*Oxya* (p. p.) and *Ensina* (p. p.) LOEW.

Genotype—*Oxya tessellata*, LOEW.

Head about as wide as thorax, or almost always broader than high, or about half as long as wide; frons flat, longer than or as long as wide, distinctly broader than eye, but the apical area very often narrower than the latter; lunula distinct, but not large; vertex more or less carinate, with the rather short vertical calli, which are about  $\frac{1}{3}$ – $\frac{2}{3}$  as long as frons; face distinctly concave, with the upper mouth-edge very often strongly produced forwards, with the antennal grooves very shallow and often indistinct, and with the eye-margins rather broad and not conspicuously broadened beneath; epistoma not prominent; back of

the head rather conspicuously produced behind, but the upper area more or less concave or flat; cheeks about  $\frac{1}{4}$  as high as eye, with indistinct genal groove; mouth-edge when seen from side straight, but moderately curved upwards at the tip, never longer than height of head; the vibrissal-edge very sparse and short bristly. Eyes moderate in size, oblong, about twice as long as wide, with the posterior margin very slightly convex, the upper angle being narrower than the lower one. Antennae inserted at the middle of eyes, not reaching to the upper mouth-edge, their bases being somewhat apart from each other; third joint  $1\frac{1}{3}$ - $1\frac{1}{2}$  times as long as wide, with the upper margin slightly concave or straight, its tip being more or less angulate; arista very short pubescent. Palpi moderate in width, sometimes distinctly broadened at the tip, rarely very narrow as in *absinthii*, FABR., bristly as usual, slightly curved upwards; proboscis more or less elongate and geniculate.

Mesonotum as long as or slightly longer than wide, subquadrate but broadest just after the middle, strongly convex above, distinctly tomentose and also pubescent, the hairs being not fine; scutellum moderate in size, rather flat above, pubescent as in the mesonotum.

Abdomen about as long as or a little longer than thorax, broader or not broader than the latter, black bristly only at the tip; 5th tergite of male about  $1\frac{1}{2}$  times as long as the 4th; 6th of female almost always as long as the 5th; genitalia prominent, but the appendages being small; hypopygium not prominent; ovipositor depressed, short, almost always shorter than the three preceding tergites together, the basal joint being almost always shorter or rarely longer than the 5th and 6th tergites together.

Wings moderate in size, almost always not very broad, with two distinct but not very long costal spines; stigma pointed, almost always a little longer than half the second costal cell; anal cell as long as or a little longer than the 2nd basal cell, drawn out into a very short and broad pointed lower angle;  $r_{2+1}$  almost always very little wavy;  $r_{4+5}$  bare, parallel with m; r-m conspicuously after the middle of  $IM_2$ , perpendicular or slightly oblique, its posterior end being nearer to the wing

tip; m-cu not longer than twice the vein r-m; nearly perpendicular, very slightly convex outwards, but sometimes straight.

Legs rather short; front femora with a row of long bristles on the underside, and with a row of short bristles on the upper side; hind tibiae with a row of short bristles on the outer side; middle tibiae with a single spur; hind femora with some bristles near the tip.

Chaetotaxy complete: Ocellar bristles strong, longer than the superior fronto-orbital pairs, divergent; fronto-orbital bristles 2:2, the upper superior pair whitish; inner vertical very much longer than the whitish outer pair; postvertical always whitish, parallel, about as long as the outer vertical bristles; genal whitish, not very conspicuous because the cheeks are furnished with rather numerous long whitish bristles; bristles of occipital row whitish, strong; dorso-central 1, at the suture or a little behind the latter; notopleural 2; mesopleural 1 or rarely 2, below this bristle there is a row of some whitish bristles; pteropleural 1, whitish, but on the sclerite there are a few rather long whitish bristles; scutellar 4, the apical pair weak and crossed, never wanting.

Two species, found in the Japanese Empire, distinguished as follows:

1. *Mesonotum unicolor*, without streaks; stigma with only a single rounded hyaline spot.....*loewiana*, HENDEL.
11. *Mesonotum* with three brown median streaks; stigma with two distinct rounded spots.....*arisanica*, sp. nov.

#### 140. *Paroxyna loewiana*, HENDEL.

LINDNER, Fl. Palaearkt., 49, p. 154, pl. X, fig. 9 (1927).

*Oxyna argyrocephala*, VON FRAUENFELD (nec LOEW, Sitzungsber. Akad. Wissensch. Wien, pl. XXII (1857); Verh. Zool.-bot. Ges. Wien, XIII., p. 220 (1863)

♂ ♀. Dark coloured species of small-sized, with hyaline spotted blackish wings. Frons with the lateral margins slightly convex, distinctly narrowed forwards, orange-yellow, distinctly and broadly dusted with a white tomentum toward the eye-margins, at where there are a few very fine pale hairs, while in the middle there is some more con-

spicuous yellowish pubescence; lunula light yellow to white; vertex with a small but almost always distinct blackish ocellar dot, and with the vertical calli very narrow and light waxy yellow; face very pale yellow, distinctly obscured by a snow-white tomentum, with the upper mouth-edge more or less reddish brown; back of the head light yellow, with a very large blackish transverse patch at the upper half, furnished with sparse yellowish bristly hairs; cheeks light yellow, distinctly broader than the 3rd joint of antennae, yellowish pubescent and bristled. Antennae orange-yellow, with the second joint more or less brownish; 3rd joint shorter than  $1\frac{1}{2}$  times the width, with the upper margin straight, the superior apex being more or less angulate; arista black, with the extreme base reddish yellow; second joint furnished with many short brown and black bristles, and with the median seta not conspicuous. Palpi orange yellow, becoming paler toward the base, with the tip not broadened and furnished with some very short black bristly hairs; proboscis reddish yellow, about as long as height of head, the apical portion being a little longer than the stem.

Mesonotum very little longer than wide, black but entirely obscured by a greyish yellow tomentum, covered with numerous short yellowish bristle-like hairs, with a black dot at the base of each the bristles; humeral calli more or less reddish; pleurae and postscutellum black, obscured by a greyish tomentum, furnished with some long yellowish bristle-like hairs on the meso- and pteropleurae; scutellum reddish yellow, distinctly darkened toward the base, tomentose and pubescent as in the mesonotum.

Abdomen blackish brown, densely dusted by a grey tomentum and covered by numerous light yellow bristly hairs; each the 4th and 5th tergites in the both sexes with two rounded brown median spots along the anterior margin, in the female also with two smaller ones in the 6th tergite, the latter being furnished with some very long black bristly hairs along the hind margin; basal joint of ovipositor strongly shining, black, black pubescent, very little shorter than the two preceding tergites together; genitalia blackish, with the appendages reddish yellow; hypopygium black, but obscured by a grey tomentum.

Wings more or less narrowly rounded at the tip, dark brown with the base whitish hyaline; stigma black, with a small rounded yellowish subhyaline spot a little before the tip; second costal cell with two very large quadrate whitish hyaline spots leaving only a narrow median blackish spot;  $R_1$  with 5 whitish hyaline spots, two basal ones of which are smaller, and the three remainings along the costal margin are large and extending behind to the vein  $r_{2+3}$ ;  $R_3$  with 9 to 10 such spots, scattered all over the cell, two large ones of which are placed at just behind the three apical spots in  $R_1$  and are constant;  $R$  with 4 spots, the two proximal ones being at the extreme base, while the rests are distinctly rounded and placed straight below the stigma;  $R_s$  with more than 7 spots, a largest one being near the base and below between the two largest spots in  $R_3$ ;  $IM_2$  with more than 3 spots, the two largest ones being in the middle and below the two distal spots in  $R$ ;  $IIM_2$  with 4 large spots, of which three are placed along the wing margin, often with a smaller other spot in the middle;  $Cu$  with 6 or 7 large spots, of which 4 or 5 are placed along the vein  $cu$ , and two remaining spots are larger and very often united with some of the precedings; second basal cell, anal cell and axillary lobe whitish hyaline, with 3 irregularly shaped brown spots, one being at the superior tip of the anal cell, middle one at the inferior angle of the latter, and the remaining one near the end of anal vein. Halteres orange-yellow; squamulae greyish white.

Legs reddish yellow with a large basal black patch on the femora, brownish pubescent and bristled.

All the bristles black, excepting of the pteropleural, genal, upper superior fronto-orbital, outer vertical and postvertical bristles, and of the bristles of occipital row, whitish yellow.

Length: Body 3-4 mm; wings 3.5-3.8 mm.

Hab. Japan (by HENDEL).

Europe.

Described from the European species, because I have no Japanese species; types in the Natural History Museum of Wien.

141. *Paroxyna arisanica*, sp. nov.

(Fig. 80; Pl. XII, fig. 1)

Distinctly differs from many species of *Paroxyna* in the strongly curved  $r_{2+3}$  of male-wings, and from the preceding species in the three brown median streaks of mesonotum.

♂ ♀. Dark coloured species, of small-sized. Frons a little broader than wide, orange-yellow, somewhat palened toward the lateral margins which are straight and are very indistinctly convergent forwards, along the eye-margins with a few blackish pubescence, but in the middle not pubescent; lunula linear, pale yellowish; vertex with a distinct black ocellar spot, and with the very indistinct short more or less shining vertical calli, at the superior corner of eye there is a blackish patch which is connected with the blackish colour of back of the head; face very broad, much broader than twice the length, conspicuously broadened beneath, whitish yellow, with broad yellow eye-margins; back of the head yellow, becoming whitish toward the lateral swellings, with a very large blackish patch in the upper portion, furnished with some yellowish bristly hairs; cheeks about  $\frac{1}{6}$  as high as eye, whitish yellow, with many short blackish bristles of the vibrissal edge. Antennae orange-yellow; 3rd joint very broad, with the under margin strongly convex, the upper apex being more or less pointed; arista black, with the base yellowish brown, microscopically pubescent; second joint brownish, furnished with many very short black bristles, without distinct median seta. Palpi light yellow, becoming orange-yellow toward the broadly rounded apex at where it is rather narrowed in the male, furnished with very few short black bristly hairs; proboscis yellow, with the stem brownish.

Mesonotum black, distinctly obscured by a dense greyish tomentum, and covered with sparse stout yellowish bristle-like hairs, with three dark brown median streaks which are extending from the anterior margin near to the posterior margin; humeral calli, pleurae, postscutellum and scutellum black, evenly obscured by a grey tomentum, excepting of the scutellum moderately shining and nearly bare from tomentum; scutellum distinctly convex above.

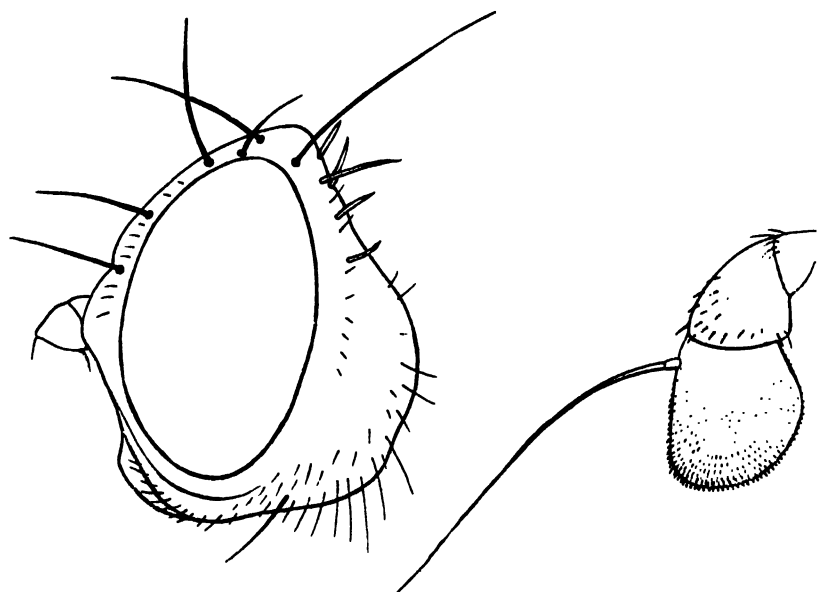


Fig. 8'.

*Paroxyna arisanica*, n. sp. ♀,  $\times$  ca 50. Antenna,  $\times$  ca 60.

Abdomen moderately shining, blackish brown, covered with numerous but sparse short black hairs which are intermixed by some whitish bristle-like hairs in the posterior half of each the tergites, in the male with an indistinct greyish tomentose median stripe; 6th tergite of female distinctly longer than the 5th, furnished with a few very long black bristles along the hind margin; 5th tergite of male also furnished with long black bristles; basal joint of ovipositor shining black, black pubescent, longer than the two preceding tergites together; genitalia blackish, becoming reddish yellow toward the apex, with reddish yellow appendages.

Wings rather narrow, the apex being narrowly rounded, blackish brown, with many whitish hyaline rounded spots; stigma distinctly black, this colour being extended below to  $r_{2+3}$ , with a small rounded hyaline spot in the distal half;  $r_{2+3}$  curved just below the stigma, especially in the male very conspicuously. The hyaline spots as follows: Second costal cell with two large quadrate spots;  $R_1$  with 6, of which three

distal spots are larger and are placed along the costal margin, a very small one is just behind the spot of stigma, and two remainings are just behind the two spots of second costal cell;  $R_1$  with 4, the distal spot being at the tip of  $r_{2+1}$ , and the 3 remainings just behind the costal indentations respectively;  $R_5$  with 6 spots, of which the apical one is small and is placed at the tip of the cell, the middle pair is always connected with each other, and the basal one is large and oblong, often there are two very minute subbasal spots in the space between the basal and median spots;  $R$  with 4, the two spots at the extreme base being ill-defined, the median one very large and quadrate, and the distal one small;  $IIM_2$  with 4, the three smaller spots along the wing-margin being not equidistant, and the rest being near the front basal corner;  $IM_2$  with 3, the median one being smallest;  $Cu$  with 5, of which three along the wing-margin are equidistant, the middle one being larger and composing of two spots, the subbasal spot is very large and is extending from  $cu$  to  $an$ , and the rest is small and is placed at the extreme base; axillary lobe with 4-6, of which the three or four are situated along the wing margin. Allula and the extreme base of wing hyaline, but very slightly smoked. Halteres reddish yellow; squamulae reddish brown.

Legs reddish yellow, black pubescent and bristled; hind femora blackish, with the distal border reddish brown; front femora blackish, excepting of the whole under side and of the broad apical border.

All the bristles black and long, but the outer vertical, postvertical and genal bristles, and the bristles of occipital row, whitish yellow; pteropleural rather weak, yellowish or brown; praesutural very conspicuous, a little above the anterior notopleural one; praescutellar very far front the hind-margin; dorsocentral at the interior end of the suture, far before the line connecting the anterior supra-alar bristles.

Length: Body 3.5-4.5 mm; wings 4 mm.

Hab. Formosa - Arisan (X).

Types in the Entomological Museum of Government Research Institute, Taihoku, Formosa; this new species is probably belonging to a new genus as it differs from *Paroxyna* in the following characters: Head broader than thorax; face very broad, distinctly broader than



twice the median length; upper superior fronto-orbital bristle fine and black; mesonotum and abdomen sparsely whitish pubescent; scutellum distinctly convex above, not pubescent; 6th tergite of female distinctly longer than the 5th;  $r_{2+3}$  in the male enormously curved at the basal portion and placed very nearer to  $r_{4+5}$  than to  $r_1$ . This is also allied to some species of the following genus, but easily distinguished by the morphology of the head.

#### LXIV. Genus CAMPIGLOSSA RONDANI.

Bull. Soc. Entom. Ital., II., p. 121 (1870)

Genotype—*Tephritis irrorata*, FALLÉN.

Head a little broader than high, or a little narrower than thorax, or a little longer than half the width; frons flat, but the eye-margins more or less elevated, very broad, longer than wide, about twice as wide as eye at the front border, broadened hindwards, wider than long; lunula very distinct and large, semicircular; vertex more or less carinate, with the rather indistinct vertical calli, which are about  $\frac{1}{3}$  as long as frons; face rather strongly concave, very broad, strongly widened beneath, with the antennal grooves broad but indistinct, with the eye-margins very broad, nearly the same in width throughout, and with the upper mouth-edge moderately produced; the angle between the frons and the face right angle; back of the head rather strongly swollen behind, but the upper area more or less flattened; cheeks about  $\frac{1}{3}-\frac{1}{2}$  as high as eye, without distinct genal groove, with the vibrissal-edge distinctly but shortly bristly. Eyes small, about twice as long as wide, with the posterior margin often more or less obtusely angulate and the anterior margin rounded, the upper angle being a little narrower than the lower one. Antennae inserted just below the middle of eyes, distinctly and rather widely apart from each other at the bases, a little shorter than the face; 3rd joint about  $1\frac{1}{2}$  times as long as wide, the upper margin being more or less concave and its tip rather pointed; arista microscopically pubescent; second joint without distinct median seta. Palpi.

rather broad and long, slightly curved upwards; proboscis more or less elongate, but very broad, geniculate.

Mesonotum subquadrate, with the lateral margins more or less convex, very little longer than wide, distinctly convex above, covered with a dense tomentum and a sparse pubescence; scutellum rather large, convex above.

Abdomen a little shorter or very slightly longer than thorax, a little broader than thorax, distinctly bristled at the tip; 5th tergite of male distinctly shorter than the two preceding tergites together; 6th of female a little longer than the 5th; genitalia prominent, with the short appendages; hypopygium small.

Wings rather broad, evenly rounded at the tip, with the two distinct marginal spines and straight veins; stigma pointed, about  $\frac{2}{3}$  as long as the second costal cell; anal cell about as long as the 2nd basal cell, drawn out into a very short rather broad pointed lower angle; r-m distinctly after the middle of IM<sub>2</sub>, perpendicular or very slightly oblique, the posterior end being nearer to the wing-tip; m-cu almost always perpendicular and very slightly convex, with the lower angle of IM<sub>2</sub> more or less pointed; r<sub>1+2</sub> bare, parallel with m.

Legs rather slender; front femora with a row of a few long and strong bristles on the underside; middle tibiae with a single long spur; hind tibiae with a row of very short bristles on the outer side; hind femora not bristly, but near the tip of upper side there are sometimes very few bristles.

Wings blackish brown, excepting the base, with numerous white rounded spots, those on the whole margin being regular; in the stigma there are always two spots.

Chaetotaxy complete: Ocellar strong, divergent; fronto-orbital 2:2 or 3:2, often some of them whitish; inner vertical much longer than the whitish outer pair; postvertical moderate in length, parallel or very slightly divergent, moderately longer than the inner occipital bristle; genal rather strong, almost always whitish, hind this bristle there are rather numerous strong whitish bristles; dorsocentral very near the suture, much before the line connecting the anterior supra-alar bristles;

notopleural 2; mesopleural 1, but there is a row of some short whitish bristles; pteropleural 1, whitish, in this sclerite there is a row of many short whitish bristles; scutellar 4, the apical pair being very short and crossed.

Two species from Japan distinguished as follows:

1. Upper superior fronto-orbital bristle whitish; basal joint of ovipositor a little longer than the two preceding tergites together. .... *hirayamae*, MATSUMURA.
11. Upper superior fronto-orbital bristle black; basal joint of ovipositor as long as the three preceding tergites together. .... *longipennis*, sp. nov.

#### 142. *Campiglossa hirayamae*, MATSUMURA.

(Fig. 81; Pl. XIII, fig. 1.)

Thous. Ins. Jap. Add., II., p. 424, pl. XXIII, fig. 19 (1916).

Very closely allied to the European *irrorata*, FALLÉN, but easily distinguished by the proportionally narrow eye-margins of face, as well as by the proportionally large eyes.

♂ ♀. Black, but entirely obscured by a dense greyish white or pale greyish brown tomentum, of small-sized, with hyaline spotted wings. Frons yellowish, obscured by a pale orange-yellow tomentum, with the eye-margins whitish, without pubescence; lunula whitish; vertex with a blackish ocellar dot, and with the more or less paler vertical calli; face whitish, with the eye-margins about  $\frac{1}{4}$  as wide as the median portion of face or narrower than the 3rd antennal joint (in *irrorata* about  $\frac{1}{3}$  as wide as the median portion of face or as wide as the 3rd antennal joint), often yellowish along the inner margin of the eye-margins; back of the head pale yellowish, with a very large black patch in the upper portion, entirely covered with a whitish tomentum, furnished with numerous long whitish yellow bristly hairs below and with some short black bristly hairs along the occipital row; cheeks paler than back of the head, whitish, hardly  $\frac{1}{3}$  as high as eye, with many whitish yellow bristles along the mouth-edge nearly throughout except for the upper mouth-edge. Eyes broader than a half the length, more oblique than in *irrorata*. Antennae yellow to pale reddish yellow, with the second.

joint often brownish; 3rd joint with the supero-apical tip narrowly rounded in the female, but rather sharply pointed in the male; arista black, with the extreme base yellow. Palpi pale yellow with the tip often brownish, black and yellowish bristly; proboscis brownish.

Thorax black, entirely obscured by a greyish white or greyish yellow tomentum; mesonotum with 5 ill-defined brownish longitudinal streaks, of which three median ones extend nearly throughout the whole length, but the submedian pair interrupted at the suture, and the lateral pair is placed in the postsutural disc, all these streaks being very often obsolete; at the base of bristles there is almost always blackish brown dot; mesopleuron with two rounded paler brown spots, of which the inferior one is smaller and is often obsolete; scutellum almost always pale at the tip.

Abdomen black, entirely obscured by a grey tomentum, rather sparsely pale yellowish pubescent all over the disc and bristly along the hind margin of each tergite except for the last one where it is furnished with about 8 very long black bristles; each the 2nd to last tergites with 4 large brown or dark brown spots along the front margin, of which the lateral spot in the second tergite is very often indistinct; basal joint of ovipositor strongly shining black, black pubescent, longer than the two preceding tergites together or a little longer than wide; genitalia dark brown, with yellow appendages.

Wings blackish brown with the base, the second basal and anal cells, and allulae whitish hyaline, with many whitish hyaline spots; r-m perpendicular, straight, but very rarely very slightly concave, with the posterior angle of IM<sub>2</sub> more or less pointed. Hyaline spots as follows: Second costal cell with two very large quadrate spots, of which the basal one is much larger than the apical one and a has very small brown dot; stigma black, with two small spots, the proximal one being very small and placed very near to the base; R<sub>1</sub> with three large quadrate ones along the costal margin, and with two small ones at the base; R<sub>2</sub> with about 10 spots, of which two are placed along the apical margin, one being at the front corner and the rest at the hind corners; R with four, the two being near the base and the two remainings in the apical

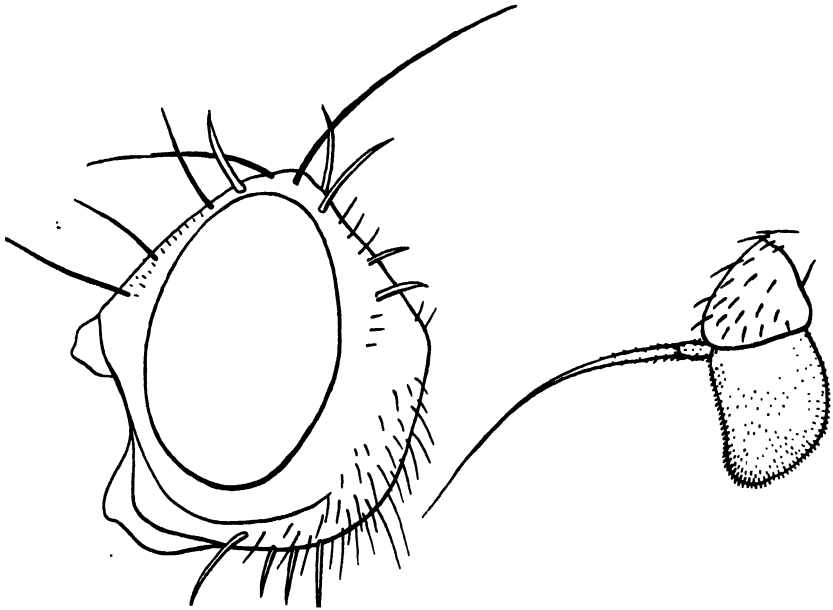


Fig. 81.

*Campiglossa hirayamae*, ♀,  $\times$  ca 50. Antenna,  $\times$  ca 60.

half;  $R_5$  with two irregular rows of 3 spots and with one larger spot at the tip;  $IM_2$  with 5 spots, one being at the hind corner and one at just behind r-m, the remainings along the basal two-thirds the posterior margin being almost always larger, very rarely with a very small spot connecting with the median spot at just behind the distal spot in  $R$ ;  $IIM_2$  with three equidistant spots along the wing-margin and with one at the basal corner, beside the latter spot there are two very small ones, each being placed near both the outer and inner side; Cu with many spots, which at the basal half are connecting with each other; axillary lobe with three spots which are broadly united with each other along the wing-margin. Halteres pale yellow to pale reddish yellow; squamulae whitish.

Legs pale yellowish brown, with the femora blackish except for the tip, pale pubescent and brown bristled.

All the bristles black, excepting of the upper superior fronto-orbital

one, vertical, postvertical, genal and pteropleural bristles, and of the bristles of occipital row, pale yellowish.

Length: Body 3-4.5 mm; wings 4.5-4.7 mm.

Hab. Japan—Tokyo; Iyo (V); Kumamoto (VI).

Corea—Koryo (VIII).

Formosa—Arisan (X).

Type in the Entomological Museum of the Hokkaido Imperial University, Sapporo, Japan.

143. *Campiglossa longipennis*, sp. nov.

(Fig. 82; Pl. XII, fig. 3)

Very near to *hirayamae* MATSUMURA and *irrorata* FALLÉN, but distinguished by the long ovipositor, by the black fine upper superior fronto-orbital bristle, and by the straight m-cu which is well-parallel with r-m.

♀. Rather large species. Frons pale orange-yellow, along the eye-margins there are many blackish pubescence; lunula light yellow; vertex more or less reddish, with a blackish ocellar dot, and with the more or less pointed greyish vertical calli; face yellowish white, very broad, with the flat eye-margins which are distinctly narrower than the apical joint of antennae; back of the head yellow, becoming paler toward the eye-margins, with a large blackish brown median patch in the upper portion, yellowish pubescent; cheeks about  $\frac{1}{3}$  as high as eye, yellowish white, furnished with many yellow bristly hairs in the hind half and with short blackish ones in the front half. Eyes with the posterior margin moderately rounded and with the anterior margin strongly rounded. Antennae more or less brownish, with the 3rd joint orange-yellow, and a little shorter than twice the width; arista black, with the basal third yellow; 2nd joint furnished with many short black bristles, but without the distinct median seta. Palpi yellow, with the apex more or less truncate and very short-pubescent; proboscis yellow, rather short.

Mesonotum black, entirely obscured by a greyish yellow tomentum

and rather sparsely covered with a yellow pubescence, with 3 indistinct narrow dark coloured median streaks in the praesutural disc and with a black dot at the base of each the bristles; humeral calli yellow, greyish yellow tomentum, pleurae and postscutellum brown, dusted with a greyish tomentum, with the prothorax yellowish; scutellum coloured and tomentose as in mesonotum, with a reddish yellow apical patch.

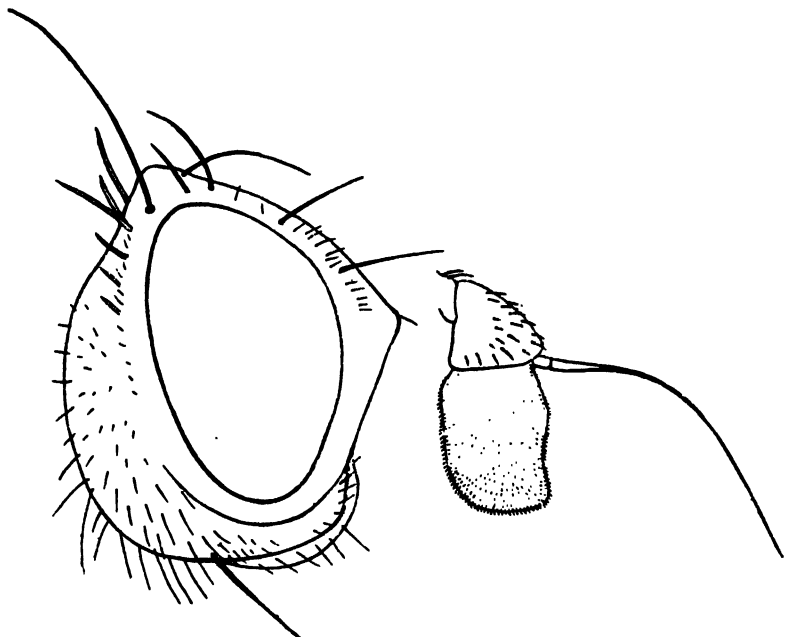


Fig. 82.

*Campiglossa longipennis*, n. sp. ♀,  $\times$  ca 40. Antenna,  $\times$  ca 48.

Abdomen elongate, dark brown, obscured by a greyish tomentum, sparsely yellowish pubescent; each the tergites with a narrow yellowish posterior margin and a short median pale reddish yellow streak, the marginal band becoming much indistinct, and the streak becoming very short and triangular appeared only at the posterior margin; 6th tergite a little longer than the preceding one, with a few long black marginal bristles; basal joint of ovipositor strongly shining black, black pubescent, a little shorter than the three preceding tergites together, or fully  $1\frac{1}{2}$  times as long as wide.

Wings rather elongate, dark brown, with the black stigma; m-cu parallel with r-m, straight, with the posterior angle of IM<sub>2</sub> distinctly pointed; hyaline spots fewer than in *hirayamae*, all being well-isolate, as shown in the figure.

Legs very slender, yellow, black pubescent and bristly; hind femora with a short blackish brown streak in the basal half of the underside.

Length: Body 5.1 mm; wings 5 mm.

Only one female, collected in Sapporo (IX), Japan, preserved in the Entomological Museum of Government Research Institute, Taihoku, Formosa.

## LXV. Genus **TEPHRITIS**, LATREILLE.

Nouv. dict. d'hist. nat. Deterville, XXIV., p. 196 (1804).

*Euribia*, HENDEL, Wien. Ent. Zeitg., XXXIII., p. 96 (1914).

Distinguished from *Campiglossa* by the narrow frons, by the narrow eye-margins of the slightly concave face, by the short proboscis, by the distinct median seta of the second antennal joint, and by the broad thoracal squamulae.

Genotype—*Musca arnicae*, LINNAEUS.

Head about as wide as thorax, broader than high or about as high as broad, or about half as long as wide; frons flat, but the eye-margins distinctly elevated, much broader than eye, about as long as or a little longer than wide, so narrowed forwards that is about as wide as eye at the antennal bases; lunula distinctly elevated, but not very broad; vertex distinctly carinate with the rather short and narrow vertical calli, which are about  $\frac{1}{3}$  as long as frons; face moderately concave, the mouth-edge being more or less produced forwards, with the antennal grooves more or less distinct and rather broad, and with the eye-margins rather narrow and not conspicuously broadened beneath; back of the head moderately convex, but the upper portion more or less concave; cheeks less than one-third the height of eye, with the rather distinct but narrow genal groove, the vibrissal-edge being rather indistinctly bristled, but the hind area of cheeks



conspicuously bristled; the mouth-edge in profile distinctly shorter than height of head, not straight. Eyes rather rounded, broader than a half the length, the posterior margin being less convex, with the upper angle narrower than the lower one. Antennae not reaching to the upper mouth-edge, inserted at the middle of eyes, the bases being very near from each other; 3rd joint about  $1-1\frac{1}{2}$  times as long as wide, with the upper margin straight, rounded at the tip but rarely more or less angulate at the tip of upper margin; arista short-pubescent. Palpi moderate in width, slightly curved upwards, often produced forwards the mouth-edge, distinctly bristled; proboscis broad and short, with the labella short and broad.

Mesonotum subquadrate, a little longer than wide, with the sides distinctly or indistinctly rounded, convex above, covered with a tomentum and a pointed or obtuse pubescence, but not very striking; scutellum subtriangular, more or less flattened, not pubescent above.

Abdomen rather short, distinctly bristled at the tip; 5th tergite of male as long as the two preceding ones together; 6th of female a little longer than the 5th; genitalia rather prominent, with short and broad appendages, but hypopygium small; basal joint of ovipositor depressed, variable in length, in some cases being shorter than the two preceding tergites together or about as long as the 3 preceding tergites together, while in others it is much longer than those, not bristly at the tip.

Wings brownish or blackish with numerous white spots, moderate in size, with two distinct marginal spines; stigma pointed,  $\frac{1}{2}-\frac{2}{3}$  as long as the second costal cell; anal cell about as long as the 2nd basal cell, with the very short pointed lower angle; r-m distinctly after the middle of  $IM_2$ , perpendicular or very slightly oblique; m-cu rather oblique, the upper end being nearer to the wing-tip, more or less convex outwards;  $r_{2+3}$  often slightly undulate;  $r_{4+5}$  bare, parallel with m.

Legs rather stout; front femora with a row of long bristles on the under side, also with a row of very short bristles on the upper side; middle femora with a row of very few rather long bristles at the middle of anterior side; middle tibiae with a single spur; hind femora

with some long bristles near the tip; hind tibiae with a row of short bristles nearly throughout the whole length of the outer side.

Chaetotaxy complete: Ocellar bristles strong, almost always longer than any of the fronto-orbital bristles, divergent; fronto-orbital bristles 2:2, the upper superior pair almost always whitish; inner vertical very long, while the outer pair is very short and whitish; postvertical whitish, parallel or very slightly divergent, almost always a little shorter than the outer vertical pair; genal rather short, almost always whitish; bristles of occipital row rather strong but very sparse, whitish, just behind this row there is a row of very short rather dense black bristles; dorsocentral 1, at the suture; notopleural two; mesopleural 2 or 3, the 1 or 2 under bristles being pale; sterno- and pteropleural<sup>(18)</sup> 1, rather strong, on the pteropleuron there are also a few whitish bristles; scutellar 4, the apical pair almost always not very shorter than the basal pair, crossed or convergent.

#### Key to the Japanese Species.

1. Stigma with white spot.
  2. Wings with more or less connected white spots; stigma with a spot at both the base and tip, the basal one being united with the apical spot of the second costal cell, and the apical one very small and fused with the basal triangular spot of R<sub>1</sub>; IIM<sub>2</sub> with 4 long spots, of which the three proximal ones are connected with each other; ovipositor long; very small species.....  
..... *formosella*, HENDEL.
  22. Wings with well-isolated white spots; stigma with a single isolated spot in the middle of the margin, and with a transverse narrow white streak at the base; IIM<sub>2</sub> with 4 distinctly isolated spots; ovipositor short; rather large species.....  
..... *punctata*, sp. nov.
11. Stigma without white spot; R<sub>1</sub> with three spots, of which the two proximal ones are large and are placed very near from each other, while the distal one is very small and is placed at the lower tip of this cell; IIM<sub>2</sub> with 4 spots, the three proximal ones being not well-defined and placed in a large greyish area; abdomen without brown spots, with long ovipositor; rather large species.....  
..... *impunctata*, sp. nov.

(18) Pteropleural bristles are rarely two.

144. *Tephritis formosella*, HENDEL.

Ann. Mus. Nat. Hung., XIII., p. 465, pl. IX, fig. 20 (*Euribia*) (1915).

The present species is easily distinguished from many species belonged to the genus *Tephritis* by having three large hyaline spots (in a row, one at the apex, one in the middle and the rest at the base) in  $R_s$ , as well as by having no spot in the stigma.

♂ ♀. Very small, dark greyish species. Frons orange-yellow, with the eye-margins distinctly whitish tomentose, in the middle there is an ill-defined pale longitudinal streak which extends from the front margin to the ocellar triangle; lunula light yellowish; vertex with a black but whitish tomentose ocellar dot and with the whitish tomentose vertical calli; face light yellow, distinctly becoming reddish brown toward the upper mouth-edge, very strongly hollowed in the middle, with the eye-margins whitish; back of the head yellow, palened beneath, with its upper portion blackish left the broad eye-margins, very sparsely yellowish pubescent; cheeks about  $\frac{1}{2}$  as high as eye, light yellow, with a few short yellowish bristle-like hairs along the vibrissal edge. Antennae yellow to pale reddish brown; 3rd joint paler than the remainings, fully  $1\frac{1}{2}$  times as long as wide, more or less angulate at the upper tip; arista blackish, with the base yellow to reddish brown, distinctly but shortly pubescent; second joint black pubescent, with a fine black median seta. Palpi pale yellow to yellow, very sparsely black-bristly toward the apex; proboscis brownish yellow.

Mesonotum black, entirely obscured by a dense greyish yellow tomentum, and covered with many sparse yellowish pubescence, with 7 reddish brown longitudinal streaks, of which the three median ones are conspicuous and extend from the front margin to near the hind margin, the median streak being often very indistinct, the lateral pair is in the praesutural disc, along the inner margin of the humeral calli, and the sublateral pair is in the postsutural disc, being always very faint; humeral calli yellow, greyish yellow dusted; pleurae and post-scutellum black, but the upper and hind margins of mesopleuron and under the base of wing reddish brown, entirely obscured by such a

tomentum as in the mesonotum; scutellum yellow, with a short brown or reddish brown lateral streak.

Abdomen black, densely covered with a yellowish grey tomentum and sparsely with a yellowish pubescence, with two rounded brown median spots in each the tergites except for the two basal tergites; 6th tergite of female with 6 long black bristles along the hind margin; basal joint of ovipositor shining, reddish castaneous, yellowish pubescent, about as long as the three preceding tergites together; 5th tergite of male longer than the two preceding tergites together, with 6 long black bristles along the hind margin; genitalia yellowish.

Wings blackish brown, gradually palened toward the posterior margin, the basal portion and allulae being whitish hyaline, with many proportionally large whitish hyaline spots and minute more or less brownish dots. Second costal cell with two large indentions, of which the distal one is extended behind to  $r_{2+3}$ ; stigma black, with a small basal spot which is united with the distal indentation of the second costal cell;  $R_1$  with 3 large indentations, the basal one being smaller and placed at the tip of stigma, and the two remainings quadrate, about in the middle of the mouth of the cell and very near from each other;  $R_2$  with one large spot at just below the two distal spots in  $R_1$ , and with some small very slightly brownish spots scattered over the cell, of which the distal one is definitely placed at the anterior corner of the cell;  $R_3$  with 3 large spots, the distal one being in the middle of the mouth, and the two remainings being in the basal half and very larger, between each the spots and at the base there are two very small more or less brownish dots, which are very variable in number;  $R$  with a very large spot in the distal half, and with a moderately large spot at the base, at the distal border there are almost always two and between the two large spots mentioned just above always two small more or less brownish dots; second basal cell whitish hyaline, with the brown apical border;  $IM_2$  with two (or three) large spots, which are united with each other along their posterior half and connected with the distal large spot in  $R$  separately, in the distal border there are a few small more or less brownish dots;  $IIM_2$

with 4 large spots, three of which are equidistant along the wing-margin, and the rest one is at the front basal corner, besides these often with one or two very small slightly brownish dots; Cu whitish hyaline, with three or four brown spots; anal cell whitish hyaline, with a brown spot at the posterior angle; allulae with an ill-defined brownish spot at the tip. Halteres pale reddish brown; squamulae greyish white.

Legs light yellow to pale reddish yellow, black pubescent and bristled; hind femora with an ill-defined broad brownish median ring.

Length: Body 2-3.8 mm; wings 2.5-3 mm.

Hab. Formosa—Kanshirei (IV); Tainan (V); Ampin (V); Koshun (IV, V); Kuraru (X); Kotosho (IV).

Types in the National Museum of Hungary, Budapest.

145. *Tephritis punctata*, sp. nov.

(Fig. 83; Pl. XII, fig. 5.)

This species may be easily distinguished from any other *Tephritis* by the wing having very well-defined small whitish hyaline spots and by no distinct median seta of the second antennal joint.

♀. Yellowish grey tomentose species, of medium-sized. Frons orange-yellow, with the eye-margins distinctly and broadly whitish tomentose, and with a broad ill-defined paler median streak; lunula yellowish white tomentose; vertex with a very indistinct dark ocellar dot, and with the greyish tomentose vertical calli; face a little broader than long, yellowish white tomentose, with a very narrow yellow edge of the eye-margins; back of the head yellow, more or less palened beneath, with the upper portion blackish leaving the broad eye-margins, in the interno-inferior portion there are many but sparse yellow bristly hairs; cheeks about  $\frac{1}{4}$  as high as eye, pale yellow, with a few short yellowish bristly hairs along the vibrissal-edge. Eyes large. Antennae pale yellowish brown; 3rd joint more yellowish, about  $1\frac{1}{2}$  times as long as wide; arista blackish, with the basal third yellowish. Palpi yellow, furnished with very sparse moderately long black bristly hairs; proboscis pale yellowish brown.

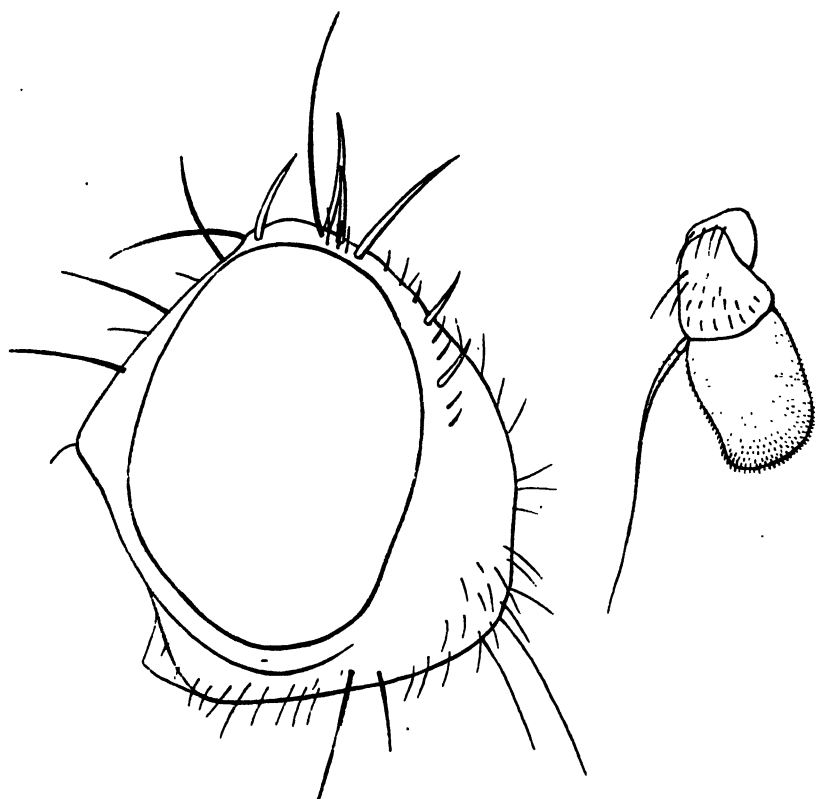


Fig. 83.

*Tephritis punctata*, ♀,  $\times$  ca 60.

Mesonotum black, with the humeral calli yellow, entirely obscured by a dense greyish yellow tomentum, with 3 ill-defined brown median streaks which are not reaching behind to the posterior margin, and with a blackish spot at the base of each the dorsocentral, praescutellar and humeral bristles, one at the base of praescutellar bristles being distinctly larger; pleurae dark brown, with the base of wings more or less yellowish, obscured by a greyish tomentum; scutellum as in the mesonotum, but the apical half yellow, with two blackish spots, one being at the base of basal bristles; postscutellum black, densely covered by a greyish tomentum.

Abdomen blackish, entirely obscured by a greyish yellow tomentum

and furnished with many rather long yellow bristly hairs, with two large rounded rather widely apart brown median spots on each the 2nd to 6th tergites, but those on the 2nd and 6th tergites very faint; 6th tergite with 6 long black bristles along the hind margin; basal joint of ovipositor shining black, very small, shorter than the two preceding tergites together.

Wings proportionally large, blackish brown, with the base hyaline and the stigma black; the whitish hyaline spots small but very distinct. Second costal cell with two large quadrate spots; stigma with a rounded small spot in the middle along the costal margin, and with a very narrow band at the base;  $R_1$  with three large equidistant indentations after the stigma and with two basal spots, the median indentation being largest and quadrate, and the distal one being smallest and rounded;  $R_2$  with 3 rounded distal spots, and with two large and one very small median spots;  $R$  with 3 rounded smaller spots in the distal half, and with two irregularly shaped spots at the base;  $R_3$  with a row of three equidistant rounded spots along the median line, and with one pair of smaller rounded spots in each the spaces between the former spots;  $IM_2$  with two spots in the basal half, and with two very small dots in the rest half, one being at just behind r-m and the remaining one at near the posterior angle;  $IIM_2$  with 4 rounded spots, three of which are along the wing-margin, and the remaining one is near the upper basal angle, near the middle of the anterior margin there is often a very small rounded dot;  $Cu$  with 3 spots along the wing-margin, with 4 largest ones along the basal two-thirds of  $cu$ , and with one large spot in the middle of  $an$ ; axillary lobe with 4 spots, of which the middle one is band-like, and the two basal ones are connecting with each other. Halteres and squamulae yellowish brown.

Legs yellow, black bristly and pubescent.

Dorsocentral bristles distinctly behind the suture; genal bristle whitish; mesopleural two, with the inferior one whitish; apical scutellar bristles very short, convergent.

Length: Body 4-4.2 mm; wings 4.5-4.7 mm.

Hab. Formosa—Musha (V, VI); Kanko (IX).

Type in the Entomological Museum of Government Research Institute, Taihoku, Formosa.

146. *Tephritis impunctata*, sp. nov.

(Fig. 84; Pl. XII, fig. 4)

Allied to the preceding species, but easily distinguished by the entirely black stigma, by the distinctly palened posterior margin and smaller hyaline spots of wings, and by the long ovipositor; from many species of *Tephritis* by the very broad frons.

♂ ♀. Greyish brown tomentose species, of medium-sized. Frons very broad, a little broader than long, but at the antennal bases about as wide as eye, reddish yellow, with the narrow eye-margins greyish tomentose and sparsely blackish pubescent, in the middle near the

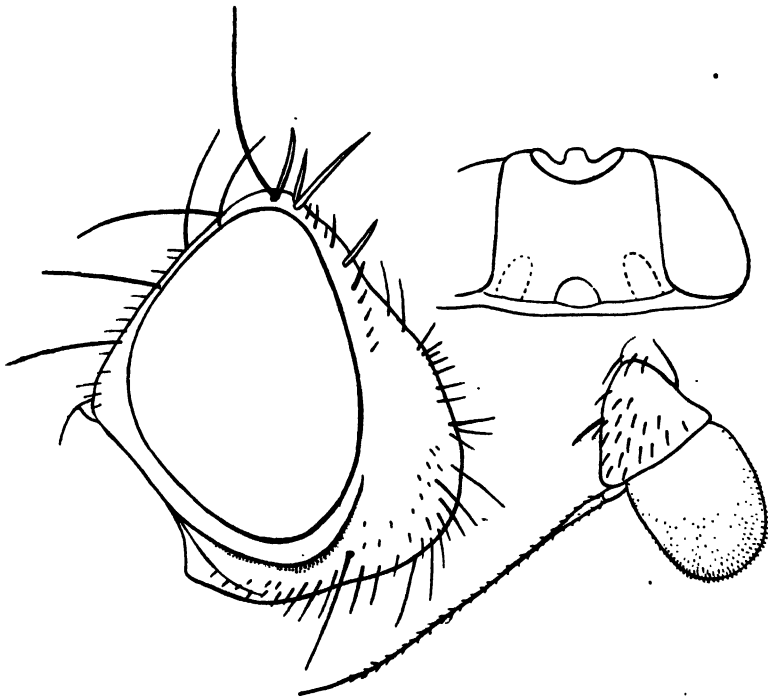


Fig. 84.

*Tephritis impunctata*, ♀, × ca 40. Frons, × ca 18; antenna, × ca 48.



lunula there are some black pubescence; lunula yellowish white; vertex with a large subquadrate greyish tomentose ocellar patch, and with the similarly dusted vertical calli; face very slightly broader than long, moderately concave, whitish yellow, with the orange-yellow inner edge of the narrow eye-margins; back of the head yellow, without any blackish patch, furnished with many long yellow and very short black hairs; cheeks about  $\frac{1}{3}$  as high as eye, yellow, furnished with many short black pubescence. Eyes rounded, broader than a half the length. Antennae reddish yellow to yellowish brown; 3rd joint a little broader than two-thirds the length; arista black, with the base yellow; median seta of second joint distinct but very short. Palpi yellow to reddish yellow, gradually palened toward the base, not reaching to the upper mouth-edge, with the upper margin distinctly concave, and with the apex furnished with some rather long black bristly hairs; proboscis yellowish brown.

Mesonotum black, with the humeral and notopleural calli yellow, entirely covered with a greyish brown tomentum which becomes greyish yellow toward the anterior border, and furnished with numerous black pubescence, in the median area there are 3 narrow brown streaks which are extending from the anterior margin near to the hind-margin, but the submedian pair often to just behind the suture; pleurae black, but the prothoracal and pteropleural regions yellowish, covered with a greyish yellow tomentum; scutellum brownish yellow to brown, obscured by a dense greyish yellow tomentum and very sparsely furnished with a black pubescence; postscutellum deep black, moderately obscured by a greyish tomentum.

Abdomen blackish brown, greyish dusted and black pubescent, along the posterior margin of each the tergites black bristly; apical tergite furnished with many (in the male almost always 8) long black bristly hairs; basal joint of ovipositor shining, dark castaneous, becoming black apically, as long as the 4 preceding tergites together; genitalia yellowish brown, with the same coloured appendages.

Wings dark brown, with the base hyaline, and the posterior border greyish; stigma entirely blackish brown, hardly as long as  $\frac{1}{3}$  the

second costal cell, rarely with a very minute infuscate apical dot; r-m straight, perpendicular; m-cu distinctly convex;  $r_{1+5}$  very rarely with two bristles toward the base of r-m; whitish hyaline spots as follows: Second costal cell brown, with two large quadrate indentations of which the proximal one is about half as wide as the distal one, at the base of costal spines there is a distinct black dot;  $R_1$  with three indentations and two ill-defined basal spots, the two proximal indentations just after the stigma being large and placed very near from each other, and the distal one being very small and placed widely apart from the basal ones;  $R_2$  with large basal and median spots, the latter one being just below the two costal indentations, with two very small ones along the wing-margin, one being at the anterior corner and the remaining near the posterior corner, and with two small dots in both the side-spaces of the large median spot, of which the one distinct dot is placed at just each the sides of the latter, while each the others is near the base and apex respectively;  $R_3$  with 4 larger nearly equidistant spots along m and with two small dots, one being just below the middle spot of  $R_2$  and the rest ones just below the apical spot of  $R_2$ , in the middle of the mouth there is a rounded, a little larger, spot; R brownish hyaline nearly the basal half, with 3 small spots in the median third along m; second basal and anal cells greyish;  $IM_2$  with 4 larger ill-defined spots, of which the two basal spots are placed longitudinally, and the two remainings below r-m are placed transversely and connected with each other, between these 4 spots there are four conspicuously smaller dots, the two ones being near m and the two remaining wide apart smaller ones near cu;  $IIM_2$  more or less greyish, with a very large antero-basal spot, and with three equidistant narrow ill-defined marginal spots; Cu with 4 very small equidistant ill-defined dots along the greyish wing-margin, with 5 indistinct basal spots, and with one largest ill-defined spot just below the postero-apical spot of  $IM_2$ , between these spots there are two or three smaller indistinct dots; axillary lobe greyish, with 4-6 indistinct dots. Halteres reddish; squamulae greyish, with dark brown margins.

Legs reddish yellow, blackish pubescent and bristled.

Upper superior fronto-orbital bristle black; genal bristle yellowish, with the tip black; mesopleural two, the inferior one being brown; pteropleural two, the inferior one being whitish; apical scutellar bristles a little shorter than the basal pair, always distinctly crossed.

Length: Body 4.5-6 mm; wings 5-5.5 mm.

Hab. Formosa—Musha (V, VI); Horisha (V); Niitaka-Prefecture (VII).

Types in the Entomological Museum of Government Research Institute, Taihoku, Formosa, Japan.

#### LXVI. Genus *SPATHULINA*, RONDANI.

Dipt. Ital. Prodr., I., p. 113 (1856).

*Ditricha*, RONDANI, Bull. Soc. Ent. Ital., III., p. 163 (1871).

Genotype—*Tephritis tristis*, LOEW.

Head as long as high, about half as long as wide, as wide as or slightly broader than thorax; frons flat, distinctly broader than eye, slightly narrowed apically, distinctly longer than wide, non-pubescent, in profile straight; lunula distinct, semicircular; vertex carinate in the median half the width, with the narrow vertical calli which are about  $\frac{1}{3}$  as long as frons; face flat, but the inferior third distinctly and nearly right-angularly produced forwards, broader than long, distinctly broadened beneath, with the narrow eye-margins; back of the head flat above and strongly convex below; cheeks narrow, about  $\frac{1}{2}$  as high as eye, with the straight mouth-edge and with the distinct genal groove. Eyes oblique, about half as wide as long. Antennae inserted at just below the middle of eyes, short; second joint without median seta; 3rd joint proportionally short and broad, about  $1\frac{1}{4}$  times as long as wide; arista microscopically pubescent. Palpi moderately broad, reaching or producing toward the upper mouth-edge, with the tip very shortly bristled; proboscis short, rather broad.

Mesonotum subquadrate, strongly convex above, a little longer than wide, covered by a tomentum, and by numerous short and stout

hairs; scutellum broad, moderately convex above, furnished with a few pubescence.

Abdomen (without ovipositor) shorter than thorax, oval; 5th tergite of male nearly as long as the two preceding ones together; 6th tergite of female a little longer than the preceding one; basal joint of ovipositor trapezoidal, a little longer than wide or the two preceding tergites together.

Wings blackish brown, with proportionally large white indentations and with a few similar spots in the middle, with the straight veins and with one long costal spine;  $r_1$  ending before the middle of front margin or very far before  $r-m$ ;  $r_{4+5}$  non-bristly;  $m-cu$  perpendicular, almost always very slightly convex;  $r-m$  rather near toward  $m-cu$ , perpendicular or oblique; anal cell shorter than the second basal cell, drawn out into a very short inferior angle.

Legs normal.

Chaetotaxy complete: Fronto-orbital 2:2, of which superior two are directing hindwards; inferior fronto-orbital, ocellar, upper superior fronto-orbital and vertical black, the remaining bristles of head being whitish; dorso-central at just behind the suture; scutellar only one basal pair.

Only one species found in our fauna.

#### 147. *Spathulina acroleuca*, SCHINER.

Novara Dipt., p. 368 (*Tephritis*) (1868).

*Oxya parca*, BEZZI, Memoirs of Ind. Mus., III., no. 3, p. 156, pl. X., fig. 62 (1913).

*Euribia parca*, HENDEL, Ann. Mus. Nat. Hung., XIII., p. 465 (1915).

A small dark species, with rather narrow wings which are distinctly whitish at the base.

♂ ♀. Frons ochraceous, somewhat darkened hindwards, with the narrow eye-margins more or less whitish tomentose and very inconspicuously pubescent; lunula light yellowish; vertex more or less greyish, with a small black ocellar spot, and with the inconspicuous vertical calli; face whitish yellow, with the distinctly white-tomentose eye-

margins which are reddish brown along the inner edge; back of the head yellow, but the upper half, excepting of the eye-margins, blackish; cheeks yellow, along the lower mouth-edge there are a few strong yellowish bristles behind the genal bristle. Antennae pale reddish yellow; 2nd joint black bristly; 3rd joint pale pubescent, with its apex narrowly rounded; arista black, with the basal fourth reddish yellow. Palpi yellow, black bristly; proboscis pale reddish yellow.

Mesonotum black, entirely obscured by a greyish yellow tomentum and covered with numerous yellowish white pubescence; pleurae blackish, with the sutures, beneath the wings and notopleurae yellowish, entirely obscured by a greyish tomentum, and furnished with a very few yellowish white pubescence in the mesopleurae; scutellum as in mesonotum, but the pubescence very fewer; postscutellum black, rather slightly covered with a greyish tomentum.

Abdomen shining, black, black pubescent and very sparsely greyish tomentose, along the posterior margin of each tergite with a few black bristles; basal joint of ovipositor strongly shining black, very sparsely black pubescent.

Wings narrow, with the costal margin distinctly incised at the tip of sc, blackish, with the base whitish hyaline, the outer margin of this coloration extending from the middle of second costal cell to the basal third of the axillary lobe along the tips of the basal cells; whitish hyaline spots as follows: Four costal indentations, of which the basal one is in the second costal cell and extends to  $r_{2+3}$ , and three remainings are in  $R_1$ , the first one being triangular, the second one largest and extending posteriorly into the middle of  $R_3$ , and the third smallest; two apical spots, one in  $R_3$  and the other in  $R_5$ , the both being connecting with each other, of which the anterior one is smaller and extends only the posterior half of the mouth and the posterior one is occupying whole the mouth. Five indentations along the posterior margin, of which two apicals are placed at the basal half the  $IIM_2$ , the both nearly reaching to m; the middle smallest one near the tip of Cu; two remainings rather broad, of which one in Cu is near the base of the mouth, and the other one (basal indentation) is placed at

the tip of axillary lobe and is anteriorly extended to cu. In the middle of wing there are three whitish hyaline spots, one rounded spot being in  $R_s$  at just front r-m, one similar but a little smaller spot near the posterior angle of  $IM_2$ , and the remaining one placed on m before r-m. A very small whitish hyaline spot at the base of Cu conspicuous. Halteres and squamulae yellowish.

Legs yellow, black pubescent and bristled.

All the bristles black, excepting for the upper superior fronto-orbital, postvertical, genal, occipital, three pteropleural, two inferior mesopleural, and prothoracal bristles yellowish white.

Length: Body 2-3 mm; wings 2.8-3 mm.

Hab. Formosa—Toroku (III); Kotosho (III, IV); Banshoryo (XI); Arisan (X); Koshun (IV, V); Rokkiri (III); Tainan (II); Shu-shu (IV).

India; Australia (Sydney).

*Oxyna parceguttata* BECKER and *Spathulina acrosticta* BEZZI are determined by HENDEL as a synonym of the present species (LINDNER'S Palaearkt. Fl., 49, p. 116), but they are probably valid species because their wings not distinctly incised at the tip of sc and also have a little different hyaline pattern. Types of BEZZI in the Indian Museum, Calcutta, India; of SCHINER could not found in the Natural History Museum of Wien.

## LXVII. Genus **PARATEPHRITIS**, nov.

Very closely allied to *Tephritis*, LATR., but easily distinguished by the situation of dorso-central bristle, which is placed distinctly behind the suture and near to anterior supra-alar bristle, by the conspicuously pubescent frons, by the whitish pteropleural bristle, by the hind femora furnished with a row of long bristles on the underside, as well as by the wing-pattern.

Genotype—*Paratephritis fukaii*, sp. nov.

Head as wide as thorax, about half as long as wide, very slightly broader than high, about  $\frac{2}{3}$  as long as high; frons distinctly broader

than eye, very slightly narrowed forwards, flat, in the middle furnished with two very broad forwardly convergent rows of yellowish stout hairs, and the eye-margins bearing many similar hairs, in profile nearly straight and about  $120^\circ$  with the face at the antennal base; lunula large, well-elevated, semicircular; vertex rather sharply carinate, with the narrow and short vertical calli which are about  $\frac{1}{3}$  as long as frons and rather widely apart from the eye-margin; face rather narrow, about as long as wide, rather little broadened beneath, moderately concave, with the eye-margins very conspicuous but narrow; antennal grooves very deep at the upper area but indistinct below; mouth-edge horizontal, the upper mouth-edge being moderately curved upwards and more or less produced forwards; back of the head moderately convex, but the upper area distinctly concave; cheeks about  $\frac{1}{4}$  as high as eye, with deep but very narrow genal groove; vibrissal-edge strongly rounded and distinctly bristled. Eyes about twice as long as wide, the posterior margin being moderately curved hindwards and the anterior margin strongly convex below the middle, with the upper angle narrower than the lower one. Antennae inserted at just below the middle of eyes and very near from each other at the bases, not reaching to the mouth-edge, rather broad; 2nd joint without distinct middle seta, but distinctly bristled on the upper and inner sides, the inner side being distinctly lobed; 3rd joint as long as the 2nd, a little longer than wide, rounded at the tip; arista nearly bare from pubescence. Palpi moderate in length, distinctly curved upwards, rounded at the tip, distinctly bristled; proboscis narrow and short, with the pointed labella.

Mesonotum very little longer than wide, broadest behind, subquadrate, convex above, densely covered by a tomentum, and furnished with numerous stout but short yellowish hairs; scutellum rather large, about  $\frac{2}{3}$  as long as wide, flat above, somewhat triangular, tomentose and pubescent as in the mesonotum.

Abdomen distinctly shorter than thorax, not broader than the latter, tomentose and pubescent, bristly at the tip; 5th tergite of male a little shorter than the two preceding ones together; 6th tergite of female very little shorter (or longer) than the 5th; genitalia rather prominent.

with the small appendages; ovipositor short and depressed, or long and cylindrical, with the basal joint shining black and covered with fine black pubescence, as long as the two preceding tergites or all tergites together.

Wings large, with the two short marginal spines, blackish brown with numerous yellowish small dots and also with a broad longitudinal streak and a narrow transverse hyaline cross-band, the longitudinal streak extending from the base to r-m and the transverse band after m-cu extending from the anterior margin to the posterior one; stigma narrow and pointed, about  $\frac{2}{3}$  as long as the second costal cell; anal cell a little longer than the second basal cell, drawn out into a short pointed lower angle;  $r_{2+3}$  very slightly waved;  $r_{4+5}$  nearly straight, with some very sparse bristles before r-m on the both sides; m in the second portion sinuate; r-m near m-cu, rather perpendicular, very slightly convex outwards; m-cu nearly perpendicular, obtusely rounded outwards.

Legs moderate in length; front femora with a row of long bristles on the postero-inferior margin and with two distinct rows of rather long bristles on the superior side; middle tibiae with a single spur; hind femora with a row of rather long bristles on the apical third of antero-inferior margin; hind tibiae with a normal row of short bristles.

Chaetotaxy complete: Ocellar longer than any of fronto-orbital bristles, divergent; fronto-orbital 2:2, the inferior pairs being a little longer than the superior pairs, of which the upper superior one is very short and whitish; inner vertical very long, the outer pair being very short and whitish; postvertical whitish, divergent, very little shorter than the outer vertical bristle; genal strong and long; bristles of occipital row well-developed, rather long, whitish, obtuse at the tip; dorsocentral 1, distinctly behind the suture or distinctly but a little before the line connecting the anterior supra-alar bristles; meso- and sternopleural 1, strong, on the mesopleuron there are some another short whitish bristles; pteropleural 1, whitish, under this bristle there are about 7 long whitish bristles; scutellar 4, the apical pair being very slightly shorter than the basal pair and crossing.



Two species from our fauna distinguished as follows :

1. Longitudinal hyaline streak of wings without brownish dots; hyaline cross-band broad, gradually but very slightly narrowed posteriorly, very slightly curved outwards; basal joint of ovipositor short, depressed, about as long as the two preceding tergites together..... *fukaii*, sp. nov.
11. Longitudinal hyaline streak of wings with some brownish dots; cross-band narrow, same in width throughout the whole length, straight; basal joint of ovipositor very long, as long as all tergites together, conical....*formosensis*, sp. nov.

148. *Paratephritis fukaii*, sp. nov.

(Fig. 85; Pl. XII, fig. 2.)

♂ ♀. A brownish species, of medium-sized, at once distinguished by the wing-pattern. Frons yellowish brown to pale reddish brown, with the narrow eye-margins greyish yellow; lunula light waxy yellow; vertex somewhat greyish, with an ill-defined blackish ocellar spot, at just behind the ocellar bristles there are two hairs which are similar to those in frons; face whitish yellow, somewhat waxy, with the well-elevated pale reddish yellow eye-margins; back of the head yellow to pale reddish yellow, with the median portion of upper area blackish, sparsely pale yellow pubescent nearly all over the surface; cheeks yellow to pale reddish yellow, with the eye-margins more or less whitish, beneath the genal groove from the face to the back of the head there are numerous short black bristle-like hairs. Antennae reddish yellow to reddish brown; first joint provided with a pale yellowish rather long bristles; 2nd joint darker than others, furnished with numerous short black bristles; 3rd joint densely covered with a yellowish microscopically pubescence; arista rather fine and long, black, with the about  $\frac{1}{3}$  basal portion reddish yellow. Palpi and proboscis reddish yellow to pale reddish brown, the former furnished with some rather long black bristles.

Mesonotum blackish brown, with the humeral and notopleural calli yellowish, entirely obscured by a dense greyish brown or greenish grey-brown tomentum and furnished with a numerous whitish pubescence; pleurae blackish brown, with the broad upper border, the

prothorax and the base of wing reddish yellow, entirely covered with a greyish tomentum and sparsely furnished with long but stout pale yellowish bristle-like hairs; scutellum coloured and tomentose as in the mesonotum, sparsely whitish pubescent; postscutellum black, moderately greyish tomentose.

Abdomen blackish brown, covered with a numerous whitish pubescence, with the posterior margin of each the tergites yellowish brown, especially in the last tergite broader and much conspicuous, along the posterior margin of the last tergite there are about 10 long black bristles; basal joint of ovipositor shining, black, as long as the two preceding tergites together, sparsely pubescent; hypopygium and genitalia yellowish brown.

Wings blackish brown, with many irregular yellowish and whitish subhyaline dots, the yellowish ones being in the anterior half and the whitish ones along the posterior margin; the white longitudinal streak broad, extending from the base of anal cell to the posterior end of

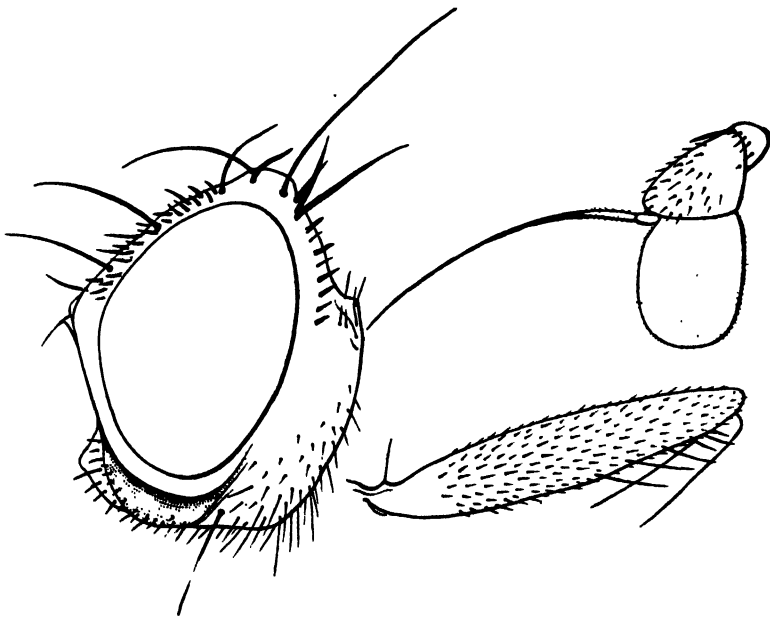


Fig. 85.

*Paratephritis fukuii*, ♀,  $\times$  ca 40. Antenna,  $\times$  ca 48; right posterior femur  $\times$  ca 28.

r-m, its margins being irregularly defined; whitish crossband nearly straight, being very slightly convex, gradually narrowed hindwards, extending from the middle of the mouth of  $R_5$  near to the end of cu, parallel with m-cu. Halteres pale yellowish; squamulae greyish brown.

Legs reddish brown, black pubescent and bristled.

Length: Body 4-5 mm; wings 4.3-5 mm.

Hab. Japan—Miyasaki (IX); Tsukumi (IX).

Many years ago the present flies have been presented by Mr. K. Fukai to me, and afterward he found that the larvae were living in the stem of *Ligularia tussilaginea*, forming a large stem-gall. Types in the Entomological Museum of Government Research Institute, Taihoku, Formosa.

149. *Paratephritis formosensis*, sp. nov.

Very closely allied to *fukaii*, but easily distinguished by the following points:

Pubescence of body finer; mesonotum with three indistinct dark longitudinal median streaks, of which the median one is shorter and extends from the anterior margin of mesonotum to the middle of postsutural disc, and the remainings are nearly reaching the posterior margin, these streaks being often slightly developed in the fresh specimens of *fukaii*; scutellum proportionally small; abdomen greyish yellow, with a pair of large transverse blackish brown spots on each the tergites; basal joint of ovipositor very long, cylindrical, about as long as all the tergites together; m very slightly sinuate in the apical section; subhyaline dots of wings more numerous, much smaller and more distinct; whitish cross-band of wings same in width throughout, narrower, and more apart from m-cu; whitish median streak of wings more irregularly margined, with four small brown dots, of which two are in  $IM_2$  and two others at the base of Cu.

Length: Body (lacking the head) 4.5 mm; wings 5.4 mm.

Only a single female (lacking the head) collected in Formosa (Tamaru, IX), preserved in the Entomological Museum of Government Research Institute, Taihoku, Formosa.

LXVIII. Genus **PROTEPHRITIS**, nov.

Very near to the genera, *Campiglossa* and *Tephritis*, but easily distinguished from the both by 3 inferior fronto-orbital bristles and by the situation of dorso-central bristles.

Genotype—*Tephritis sauteri*, ENDERLEIN.

Head as wide as thorax, broader than high, or about half as long as wide; frons a little broader than eye, narrowed at the base of antennae, flat, very sparsely haired, in profile the anterior half distinctly rounded, with the eye-margins more or less elevated; lunula distinct; vertex more or less carinate with the narrow vertical calli which are not reaching the middle of frons; face concave, narrow, longer than wide, with the eye-margins narrow, and with the upper mouth-edge more or less produced; antennal grooves narrow but rather distinct, reaching to the mouth-edge; back of the head rather strongly convex, except the upper area distinctly concave; cheeks narrow, with the very narrow but rather distinct genal groove; vibrissal-edge shortly bristled; mouth-edge in profile conspicuously shorter than height of head, moderately convex. Eyes large, about twice as long as wide, with the posterior margin slightly convex, and with the upper angle very little narrower than the lower one. Antennae inserted in the middle of eyes, placed very near from each other at the bases, not reaching to the upper mouth-edge; 2nd joint without distinct long middle seta; 3rd joint small, as long as the 2nd but distinctly narrower than that, about  $1\frac{1}{2}$  times as long as wide, rounded at the tip; arista short-pubescent. Palpi rather broad, distinctly bristled at the tip; proboscis rather short but not broad, the labella being more or less pointed.

Mesonotum distinctly longer than wide, broadest behind the middle, convex above, densely covered by a tomentum and a rather fine pubescence; scutellum subtriangular, flat and nearly bare from pubescence, but covered with a dense tomentum as in the mesonotum.

Abdomen not longer than thorax, bristly at the tip, not spotted; 5th tergite of male shorter than the two preceding ones together; 6th of female as long as or very little shorter than the 5th; genitalia

prominent, with the very conspicuous appendages; hypopygium rather prominent; basal joint of ovipositor long, depressed, sparsely haired, not bristly at the tip, longer than or as long as the three preceding tergites together.

Wings blackish, whitish spotted, rather large, with the two distinct marginal spines, and with the straight veins; stigma pointed, about  $\frac{3}{4}$  as long as the second costal cell; anal cell a little shorter than the 2nd basal cell, with the lower angle broadly pointed;  $r_{4+5}$  entirely bare on the upper side but on the under side there are one or two bristles, parallel with m; r-m after the middle of  $IM_2$ , nearer to the middle than to m-cu, perpendicular or a little oblique so that the anterior end is nearer to the wing tip; m-cu parallel with r-m, very slightly convex outwards.

Legs moderate in length; front femora with a row of long bristles on the under side, and with two rows of short bristles on the upper side; middle tibiae with a single long spur; hind femora with very few rather short bristles near the tip; hind tibiae with a row of short bristles on the outer side.

Chaetotaxy complete: Ocellar bristles well-developed, short or long, divergent or nearly parallel; fronto-orbital 2:3, strong, brownish or blackish; inner vertical much longer than the outer pair which is yellowish; postvertical rather long but shorter than the outer pair of the vertical, parallel; genal rather weak pale-coloured, on the hind-lower area of cheeks there are also rather numerous long bristles; bristles of occipital row long and sparse, yellowish; dorsocentral 1, distinctly behind the suture but a little before the line connecting the anterior supra-alar bristles; noto- and mesopleural 2; sterno- and pteropleural 1, strong; scutellar 4, the apical pair a little shorter than the basal pair and parallel or crossed.

Two species from Formosa distinguished as follows:

1. Ocellar bristles very short, divergent; apical scutellar bristles parallel or very rarely accidentally crossed; pterostigma with a single whitish spot at the base; wings in the middle with a few whitish dots.....*sauteri*, ENDERLEIN.
11. Ocellar bristles very long, parallel; apical scutellar bristles crossed; pterostigma

with two whitish spots; wings in the middle with numerous whitish dots. ....  
 .....sonani, sp. nov.

150. *Protephritis sauteri*, ENDERLEIN.

Zool. Jahrb., Abt. Syst., XXXI., 3, p. 456, fig. A (*Tephritis*) (1911).

A greyish yellow species of medium-sized, with well-defined wing-pattern.

♂ ♀. Frons ochreous, with the eye-margins snow-white tomentose and distinctly yellowish-pubescent, in the middle there is a very few yellowish pubescence; lunula snow-white tomentose; vertex somewhat brownish, but the vertical calli, the ocellar triangle and the transverse carina whitish tomentose; face light waxy yellow, covered with a whitish tomentum, with the inner edge of eye-margins distinctly reddish brown; back of the head light yellow, whitish tomentose, in the lower half there are numerous pale yellowish hairs, toward the lateral borders some shorter black ones; cheeks light yellow, whitish tomentose, with the vibrissal edge yellowish bristled. Antennae yellow to reddish yellow; first joint provided with a few rather long black bristles along the upper apical margin; 2nd joint furnished with many short black bristles; 3rd joint covered with numerous pale yellow microscopical hairs, with the upper margin slightly concave; arista black, with the base reddish yellow, black pubescent. Palpi yellowish white, furnished with some black bristles along the under margin, and provided with many fine pale yellow hairs at the upper tip; proboscis pale reddish brown.

Mesonotum blackish brown, entirely obscured by a dense greyish, somewhat greenish, yellow tomentum, and covered with numerous short but stout pale yellowish hairs; humeral and notopleural calli, prothorax and the broad area beneath the wing-bases yellowish, greyish yellow tomentose; the remaining pleural portions blackish, moderately tomentose; scutellum blackish, with the lateral margins and apex pale reddish yellow, tomentose as in the mesonotum, furnished with a few pale yellowish pubescence; postscutellum black, covered with a rather dense greyish tomentum.

Abdomen reddish yellow, in the anterior half of each the tergites with a large transverse blackish median patch, which in the two last tergites of female or in the last one of male becomes very large and is occupying nearly all over the surface; pubescence pale yellowish; bristles of the last tergite brownish; basal joint of ovipositor shining, black, as long as the three preceding tergites together, black pubescent; genitalia and hypopygium shining black, with the appendages of the former yellowish.

Wings blackish brown, with the base whitish subhyaline, and with the whitish subhyaline spots as follows: Second costal cell with two very large quadrate spots and at its extreme base a very narrow one, of these spots the middle one is very narrowly extending posteriorly to the tip of the second basal cell and the basal one becomes very broad posteriorly and is extending to the anal cell, these two being separated by a very narrow, interrupted on *m*, oblique (from near the base of *rs* to the lower angle of the second basal cell), brownish streak; stigma with a small rounded dot at the anterior base; *R*<sub>1</sub> with a very small dot at just below the apical spot of the second costal cell, and with 3 narrow indentations, which are reaching the *r*<sub>2+3</sub> and are nearly the same in width, the first one just behind the stigma being extended to the anterior end of *r-m* and the middle one being placed nearer to the first one than to the third; *R*<sub>2</sub> with a small indentation at the anterior corner, and with a very small dot at just below the median indentation of *R*<sub>1</sub>, the latter becomes very often very minute; *R*<sub>3</sub> with 3 small spots, of which the apical one is in the middle of the mouth and is semicircular, and the remaining two are placed along *m*, the proximal one being large and very near to *m-cu*, and the distal one being nearer to the apical one than to the former; *IM*<sub>2</sub> with two proportionally large rounded spots, the both being widely apart from each other; *IIM*<sub>2</sub> with 3 narrow equidistant indentations and one small rounded spot toward the anterior basal corner; *Cu* with 3 somewhat rounded equidistant indentations and 3 larger rounded spots, two of the latter are near in the middle of *cu* and a smaller one near in the middle of *an*, at the extreme base there is also a minute triangular

dot; axillary lobe pale brownish, with 8 ill-defined rounded subhyaline spots. Halteres and squamulae greyish, the former being often pale reddish yellow.

Legs reddish yellow, brown pubescent and pale reddish yellow bristled.

All the bristles yellowish brown, excepting the postvertical bristles, propleural bristles and bristles of occipital row whitish.

Length: Body 4.5-5.5 mm; wings 4.5-5 mm.

Hab. Formosa - Takao (XI, XII); Kuraru (IV); Garambi (X); Koshun (III); Kankau (IV); Ampin (IV); Ban-shoryo (XI); Banshiden (I); Chipon (V); Toyen-mongai (II); Ryukokado (I).

Type in the Zoological Museum of Stettin, Germany.

151. *Protephritis sonani*, sp. nov.

(Fig. 86; Pl. XII, fig. 6.)

Easily distinguished from the preceding species by the wings which have numerous small dots.

♂ ♀. Frons ochraceous or dark ochraceous, black pubescent, with the very narrow eye-margins whitish tomentose and black pubescent; lunula waxy yellowish white, with a distinct brown margin; vertex reddish brown or brown, with the vertical calli and ocellar triangle blackish but greyish tomentose; face brownish, obscured by a greyish white tomentum, the inner edge of the eye-margins being very slightly reddish, and the upper mouth-edge being distinctly brown; back of the head and cheeks coloured and pubescent as in *sauteri*, ENDERLEIN. Antennae brown, with the 3rd joint reddish yellow, bristled and pubescent as in *sauteri*; 3rd joint with its upper margin never concave but slightly convex; arista as in *sauteri*. Palpi proportionally large, pale yellow, black bristly, without conspicuous pale pubescence; proboscis light yellow to yellow.

Mesonotum dark brown, with the lateral margins including the



humeral and notopleural calli yellow, entirely obscured by a dense greyish white tomentum and covered with a pale yellowish pubescence; pleurae yellow, excepting for a large patch of mesopleuron and the nearly all over the sternopleuron blackish, entirely covered with a

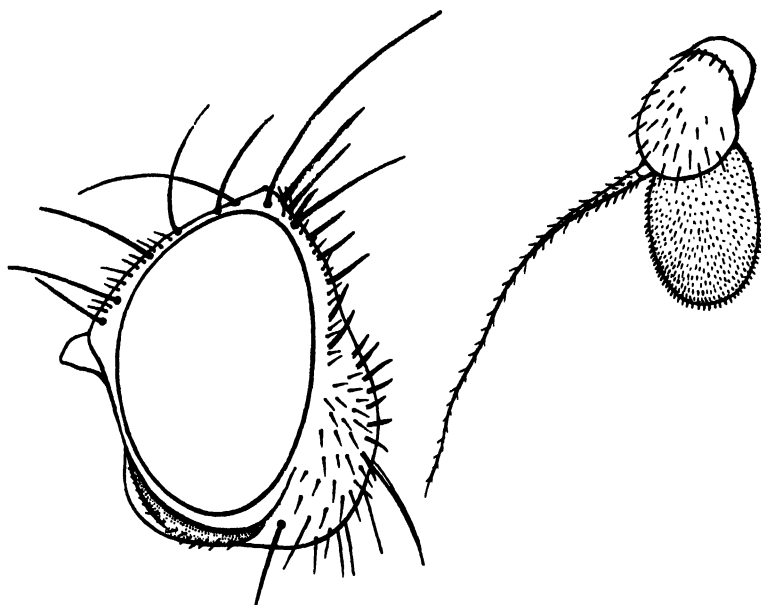


Fig. 86.

*Protephritis sonani*, ♀,  $\times$  ca 28. Antenna,  $\times$  ca 48.

greyish tomentum, on the mesopleuron brown and on the pteropleuron light yellowish pubescent; scutellum dark brown, with the lateral and posterior margins yellow, obscured as in the mesonotum and very sparsely pubescent; postscutellum black, obscured by a greyish tomentum. In the male the mesonotum and pleurae without yellow portions.

Abdomen blackish brown, with a narrow reddish yellow hind marginal band on each the tergites except for the first one, slightly greyish tomentose and densely pale yellowish pubescent, on the hind margin of the last tergite there are some long blackish bristle-like hairs; 6th tergite of female a little shorter than the 5th; basal joint of

ovipositor shining castaneous, very long and slender, about as long as the four preceding tergites together, black pubescent; genitalia blackish brown, with the appendages yellow.

Wings proportionally large, blackish brown, with the base hyaline, and with numerous small white subhyaline spots as in follows: Second costal cell hyaline, with a distinct median and an indistinct basal brown spots; stigma pale brown, with two rather small indentations;  $R_1$  with three large quadrate equidistant indentations, along  $r_{2+3}$  there are 8 very small rounded dots;  $R_2$  with two small rounded marginal dots (one at the anterior corner and the other near the posterior corner), with 8 or 9 very small rounded dots in the middle two-fourths along  $r_{2+3}$ , and with 10 similar dots along  $r_{4+5}$ ;  $R$  with 7 very small rounded somewhat brownish dots along  $r_{4+5}$ , and with 6 similar dots along  $m$ ;  $R_5$  with a very narrow marginal band (not reaching the both  $r_{4+5}$  and  $m$ ), with 3 very small rounded equidistant dots along  $r_{4+5}$ , and with two similar very widely apart dots along  $m$ ;  $IM_2$  with 3 very small somewhat brownish dots along the basal half of  $m$ , with a similar dot near the posterior basal corner, and with 3 a little large rounded white dots of which two are along the distal half of  $cu$  and the remaining one below the  $r-m$ ;  $IIM_2$  with 3 narrow oblong equidistant indentations, and with 4 small rounded dots in the antero-proximal area;  $Cu$  with 4 irregularly shaped equidistant spots along the wing-margin, in the middle there are 5 ill-defined rounded spots and at the base two very small dots; axillary lobe with 4 small irregularly oblong equidistant spots along the wing-margin, and with one large spot in the middle and 4 very small dots at the basal border. Halteres and squamulae brown.

Legs yellowish brown, blackish pubescent and bristled.

All the bristles brownish, excepting of the postvertical bristles and bristles of occipital row yellowish white.

Length: Body 5-7 mm; wings 6.5-6.8 mm.

Hab. Formosa—Taikan (IX); Arisan (VI).

Types, collected by Mr. J. SONAN, in the Entomological Museum of Government Research Institute, Taihoku, Formosa.

LXIX. Genus *ACTINOPTERA*, RONDANI.

Bull. Soc. Ent. Ital., III., p. 162 (1871).

*Urellia* (p. p.) LOEW, Europ. Bohrl. (1862).

Genotype—*Tephritis discoidea*, FALLÉN.

Head very little broader than or as wide as thorax, broader than high, a little higher than long, or a little longer than a half the width; frons flat, wider than twice the width of eye, slightly narrowed forwards, with the slightly elevated eye-margins and lunula, not pubescent; vertex distinctly carinate, with the very small rather indistinct vertical calli, which are about  $\frac{1}{4}$  as long as frons; face concave, with the shortly produced upper mouth-edge, the antennal grooves being broad and reaching to the mouth-edge, and the eye margins moderate in width and very slightly broadened below; back of the head moderately convex, except the upper area flattened; cheeks rather broad, about  $\frac{1}{3}$  as high as eye, with the distinct narrow genal groove, and with the mouth-edge slightly convex. Eyes comparatively large, oval, narrowed upwards. Antennae inserted at the middle of eyes and near from each other, a little shorter than face; 2nd joint with the distinct median seta; 3rd joint broad, about as long as or a little longer than wide, with the upper margin straight or more or less concave, rather pointed at the tip; arista bare; palpi straight, moderate in length, distinctly bristled; proboscis more or less elongate and geniculate, but in the formosan species rather short.

Mesonotum somewhat quadrate, but the lateral margins are distinctly convex, a little longer than wide, strongly convex above, densely tomentose, moderately pubescent; scutellum subtriangular, slightly convex above, tomentose.

Abdomen as long as thorax, tomentose and pubescent, bristly at the tip; 5th tergite of male about  $1\frac{1}{2}$  times as long as the 4th; 6th tergite of female distinctly longer than the 5th; genitalia more or less prominent, with the very small appendages; ovipositor more or less depressed, moderate in length, with the basal joint short or long and sparsely haired.

Wings rather narrow, with one or two very short marginal spines; the apical  $\frac{3}{4}$  dark coloured, with star-like hyaline spots; stigma rather triangular and pointed, about half as long as the second costal cell; anal cell distinctly shorter than the 2nd basal cell, with the more or less pointed lower angle;  $r_{2+3}$  more or less waved;  $r_{4+5}$  bare, rather straight and parallel with m; r-m distinctly after the middle of  $IM_2$ , straight or very slightly convex outwards, perpendicular or very slightly oblique, the posterior end being near to the wing-tip; m-cu almost always parallel with r-m.

Legs proportionally long, normally bristled.

Chaetotaxy complete: Ocellar strong, divergent, brownish to black; fronto-orbital 1:2 or 1:3, dark coloured; inner vertical strong, dark coloured, while the outer pair is short and whitish; postvertical rather short, whitish, shortly or widely apart from each other, divergent; genal not very strong, pale or dark coloured; bristles of occipital row rather sparse, whitish, obtuse at their tips; dorsocentral 1, at the suture; sterno-, ptero- and mesopleural 1, strong, on the mesopleuron there is also a row of whitish short bristles; scutellum with only one basal pair.

152. *Actinoptera formosana*, sp. nov.

(Fig. 87; Pl. XIII, fig. 2.)

The present species is distinguished from Palaearctic ones by rather short proboscis, by one brown spot of the second costal cell, and by only two inferior fronto-orbital bristles, as well as by the hyaline spots of wings.

♂ ♀. Frons light orange-yellow, very slightly brownish toward the vertex, with the eye-margins greyish white tomentose and very sparsely blackish pubescent; lunula greyish white tomentose; vertex more or less brownish, with the brown vertical calli and the blackish ocellar triangle, the both being obscured by a greyish tomentum; face yellowish, densely whitish tomentose, but the eye-margins yellow tomentose; back of the head yellowish, slightly whitish tomentose,

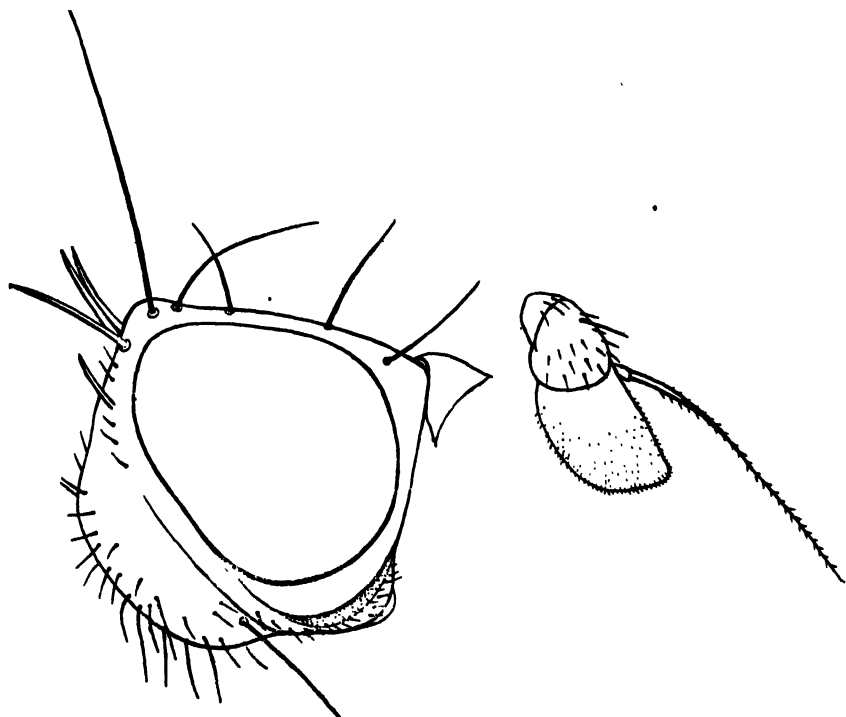


Fig. 87.

*Actinoptera formosana*, ♀,  $\times$  ca 60.

sparsely yellowish pubescent below, with a large ill-defined dark patch in the upper portion; cheeks yellow, whitish tomentose, with the deep genal groove, and with some very short yellowish bristle-like hairs along the vibrissal edge. Antennae brownish yellow, with the 3rd joint reddish yellow; 3rd joint whitish pubescent, with its upper margin straight, and its tip pointed; arista black, with the base yellowish brown; second joint furnished with many very short blackish bristles. Palpi dirty yellow, with a few black bristles at the tip and with many yellowish hairs along the under margin; proboscis dirty yellow, short.

Mesonotum black, entirely obscured by a greyish (somewhat yellowish) brown tomentum, and covered with a sparse black pubescence; pleurae and postscutellum black, obscured by a greyish to-

mentum, in the meso- and sternopleurae there are some black hairs; scutellum black, entirely obscured by a tomentum as in the mesonotum.

Abdomen black, obscured by a brown tomentum, but the basal joint and an ill-defined median streak throughout the whole length greyish tomentose, covered with many black and yellowish hairs, the blackish ones being in the first three tergites only; basal joint of ovipositor shining black, shortly black pubescent, as long as the two preceding tergites together; hypopygium large, shining black; genitalia very small, black.

Wings dark brown, with two very short marginal spines, and with many large whitish subhyaline spots as follows: Second costal cell hyaline, with a triangular median spot along the costa; stigma blackish;  $R_1$  with 4 spots, one being at the base, two median ones just behind the stigma, and the rest rather near the tip;  $R_3$  with 3 spots in the basal half, and with two along the mouth;  $R_5$  with a small one near the base and a large one at the tip, at just before the apical spot there are two small spots and in the middle a very small dot;  $R$  with 5 equidistant spots, but two proximal ones being rather near from each other and ill-defined;  $IM_2$  with 4 equidistant spots, of which the distal one is transverse-oblong;  $IIM_2$  with 3 spots along the mouth, and with two smaller ones along  $m$ ;  $Cu$  with 4 spots on the marginal median longitudinal line, and with one at the tip of  $an$ ; second basal and anal cell subhyaline; axillary lobe with two distinct equidistant spots along  $an$ , and with two or three very ill-defined spots in the rest; allula subhyaline. Whitish spots in the male distinctly larger than in the female so that the subapical brown patch is very striking.

Legs yellowish brown, becoming yellow towards the tarsi, black pubescent and bristled.

All the bristles brownish; postvertical and outer vertical bristles and bristles of occipital row whitish.

Length: Body 3.2–4 mm; wings 4–4.2 mm.

Hab. Formosa—Shukoran (IX); Royeichi (IX); Arisan (X).

Types in the Entomological Museum of Government Research Institute, Taihoku, Formosa, Japan.

LXX. Genus **TRYPANEA**, SCHRANK.

Briefe Donaumoor, p. 147 (1795).

*Urellia*, ROBINEAU-DESVOIDY, Essai sur les Myod., p. 774 (1830).

Distinguished by the wing-pattern being star-shaped and limited toward the apex, and by the scutellum bearing only one pair of basal bristles.

Genotype—*Musca stellata*, FÜESSLY.

Head a little broader than thorax, broader than high, and longer than a half the width; frons flat, about twice as wide as eye, but narrowed forward, in profile straight and about 90° with the face at the base of antennae, its eye-margins rather broad and elevated; lunula large, semicircular; vertex distinctly carinate, with the short but distinct vertical calli which are slightly extending the tip of ocellar triangle; face about as long as wide, conspicuously broadened beneath, slightly concave, with the mouth-edge distinctly produced forwards, with the antennal grooves broad and rather deep, and with the eye-margins narrow but distinctly broadened upwards; back of the head rather evenly convex throughout, but the middle of the upper area more or less concave; cheeks narrow, about as wide as 3rd antennal joint, with the mouth-edge moderately carried below, and with the genal groove narrow and rather distinct; the vibrissal-edge indistinctly bristled. Eyes large, oval, with the posterior margin rather strongly convex but less than in the anterior margin, the lower angle being broader than the upper one. Antennae inserted very near from each other and below the middle of eyes, not reaching the upper mouth-edge; 2nd joint almost always with a distinct median seta; 3rd joint  $1\frac{1}{2}$  times as long as wide, with its upper margin more or less concave, and with its tip distinctly pointed or very narrowly rounded; arista microscopically pubescent. Palpi rather narrow, slightly curved upwards, more or less bristled; proboscis broad and short, with the very short labella.

Mesonotum subquadrate, very slightly longer than wide, convex above, densely covered with a tomentum and a pubescence; scutellum rather large, triangular, flat above.

Abdomen almost always a little longer than thorax and also broader, distinctly bristled at the tip, pubescent and tomentose; 5th tergite of male about  $1\frac{1}{2}$  times as long as the 4th; 6th tergite of female as long as or longer than the 5th; genitalia rather prominent; ovipositor depressed, with its basal joint distinctly pubescent and about as long as or longer than the two preceding tergites together.

Wings comparatively long, almost always with a single distinct marginal spine and with the straight veins; stigma short and pointed, about as long as or shorter than a half the second costal cell; anal cell a little shorter than the 2nd basal cell, with the lower angle more or less pointed, the anal cross-vein being concave or obtusely angled inwards;  $r_{2+3}$  almost always very slightly waved;  $r_{4+5}$  bare, parallel with m; r-m conspicuously after the middle of  $IM_2$ , perpendicular or very slightly oblique, its posterior end being nearer to the wing-tip; m-cu almost always very slightly convex outwards, nearly perpendicular, parallel with r-m or not. Wings blackish or dark coloured and reticulated by the hyaline spots, except toward the base hyaline.

Legs rather narrow, but not very long; front femora with a row of long bristles on the underside; middle femora with a row of rather distinct bristles at the middle of anterior side; middle tibiae with a single spur; hind tibiae with two rows of rather strong bristles on the posterior side.

Chaetotaxy complete: Ocellar bristles strong, divergent; fronto-orbital 2:3 or 2:4, the upper superior pair being always whitish; inner vertical very much longer than the whitish outer pair; post-vertical whitish, parallel or slightly divergent, about as long as the outer vertical bristles; genal well-developed and rather striking; bristles of occipital row whitish; dorso-central at the suture; sterno- and pteropleural strong, on the pteropleuron there are some another short whitish bristles; mesopleural 1, below this with a row of rather long whitish bristles; scutellar only one basal pair.

Our species distinguished as in follows:

1. Fronto-orbital bristles 2:3; face distinctly concave.
2. Pterostigma about as long as half the second costal cell; from the pterostigma



to r-m there is an oblique brownish streak.

3. Pterostigma as long as half the second costal cell; r-m distinctly shorter than the apical section of the anterior margin of IM<sub>1</sub>; IM<sub>2</sub> entirely whitish hyaline at the basal half; R in the male with a dark spot or streak.....*amoena*, VON FRAUENFELD, var. *kotoshoensis*, nov.
33. Pterostigma longer than a half the second costal cell; r-m as long as the apical section of the anterior margin of IM<sub>2</sub>; IM<sub>2</sub> greyish, with 4 or 5 hyaline spot; R with a dark oblique streak near the tip. ....  
.....*ambigua*, sp. nov.
22. Pterostigma distinctly shorter than a half the second costal cell; from the pterostigma to r-m there is no oblique streak; r-m shorter than the apical section of the anterior margin of IM<sub>2</sub>; IM<sub>2</sub> and R whitish hyaline nearly throughout..... *formosae*, HENDEL.
11. Fronto-orbital bristles 2: 4; face flat, with the upper mouth-edge slightly produced forwards; pterostigma as long as a half the second costal cell; from the pterostigma to r-m there is a distinct blackish oblique streak; r-m shorter than the apical section of the anterior margin of IM<sub>1</sub>; marginal hyaline rays distinct.  
.....*distincta*, sp. nov.

### 153. *Trypanea amoena*, FRAUENFELD.

'Sitzgsber. Akad. Wiss. Wien, XXII., p. 542, fig. 2 (*Trypeta*; 1856'.

*Trypeta stellata* var. 1, LOEW, Germ. Zeitschr. V., p. 411 (1844).

*Ditricha parisiensis*, RONDANI, Prodr. VII., Ortolid., p. 29 (1871).

HENDEL has recorded the species from Formosa in LINDNER'S Palaearktische Fliegen. I have, however, found no specimens of the valid *amoena* in our splendid collections of fruit-flies. Only a single pair of an allied species, collected in Kotosho, Formosa, will be described below as a variety of the species.

#### var. *kotoshoensis*, nov.

♂ ♀. Frons yellow, densely ash-grey tomentose, in the median portion more or less ochraceous; lunula whitish; vertex more or less brownish, with an ill-defined very small dark ocellar dot; face yellowish, with the inner edge of the eye-margins more or less reddish brown, especially in the male; back of the head light yellow, yellowish pubescent below; cheeks yellow, with very short hairy bristles of the

vibrissal-edge. Antennae yellowish brown; 2nd joint furnished with many short blackish brown bristles; 3rd joint a little longer than wide, with its upper tip more or less rounded; arista black, with base yellowish; black pubescent. Palpi yellow, yellowish bristly; proboscis yellow, with more or less brownish labella.

Mesonotum black, with the humeral and notopleural calli yellow, entirely obscured by a dense ash-grey tomentum, and covered with a numerous short yellowish white pubescence; pleurae blackish, with the sutures yellow, entirely covered with a yellowish ash-grey tomentum, very sparsely yellowish pubescent; scutellum as in the mesonotum, but less pubescent and its margins being more or less yellowish; postscutellum black, ash-grey tomentose.

Abdomen brown, with the base of each the tergites more or less yellowish, entirely greyish tomentose and rather sparsely yellowish pubescent; 6th tergite of female distinctly longer than the 5th; basal joint of ovipositor shining, dark castaneous, furnished with numerous rather long yellowish pubescence, shorter than the two preceding tergites together; genitalia and hypopygium yellow.

Wings with the rather narrow stigma which is about half as long as the second costal cell, and with r-m distinctly shorter than the apical section of the anterior margin of  $IM_2$ ; pattern of wings as follows: Stigma hyaline, with an oblique brownish streak extending from the antero-basal corner to near the anterior tip of r-m, the streak in the female being very narrow and more or less interrupted at the veins, while in the male it is very broad, not interrupted and entirely occupied all over the stigma;  $R_1$  with two whitish hyaline closed basal indentations after the brownish streak of stigma, of which the proximal one is very large and is extending to  $r_{4+5}$ , while the next one extends to  $r_{3+4}$  and is triangular;  $R_2$  with two rounded similar coloured spots, one being at the anterior apical corner and the rest near the postero-apical corner;  $R_4$  with a large rounded similar apical spot, with a medium-sized transverse-oblong basal one, with a small rounded one at the anterior tip of m-cu, and with a similar one near the apical spot along m, in the male the first spot being connected with the

posterior one of  $R_s$  and the second one very minute, appearing only at the antero-basal corner of  $R_s$ ;  $IIM_2$  with 3 rather narrow whitish hyaline streaks, of which the distal one is connected with the subapical spot of  $R_s$ , the median one is not reaching  $m$ , and the proximal one is concave and is connected with the median streak, in the male the proximal streak being divided into two rounded spots and not connected with the median streak;  $IM_2$  nearly entirely hyaline, with two brownish narrow transverse streaks, the distal one being placed very near  $m-cu$  and entire, and the rest at just behind  $r-m$  and only reaching to the middle of the cell, in the male being brown in the distal half and with one small distal and one large proximal rounded hyaline spots;  $R$  hyaline throughout, but in the male brown in the apical half and with a rounded hyaline spot at the antero-apical corner. Halteres and squamulae yellowish.

Legs yellow, somewhat brownish, pale pubescent and bristled.

All the bristles brownish, excepting of whitish ones; fronto-orbital 2:3.

Length: Body 3.2–4 mm; wings 3.8–4.2 mm.

Hab. Formosa—Kotosho (VII).

Types in the Entomological Museum of Government Research Institute, Taihoku, Formosa.

154. *Trypanea ambigua*, sp. nov.

(Fig. 88; Pl. XIII, fig. 5.)

Rather near to *Trypanea cosmia* SCHINER, but at once distinguished by the large stigma and by the greyish  $R$ ,  $IM_2$  and  $Cu$  (these cells hyaline spotted) as well as by less tomentose body.

♀. Frons light reddish yellow, rather slightly whitish tomentose; lunula light waxy yellow, moderately tomentose; vertex somewhat darker, with a small blackish ocellar dot; face light yellow, with the pale reddish yellow eye-margins, moderately tomentose; back of the head yellow, with a very large blackish patch in the upper portion, distinctly yellow pubescent; cheeks yellow, narrower than the 3rd joint

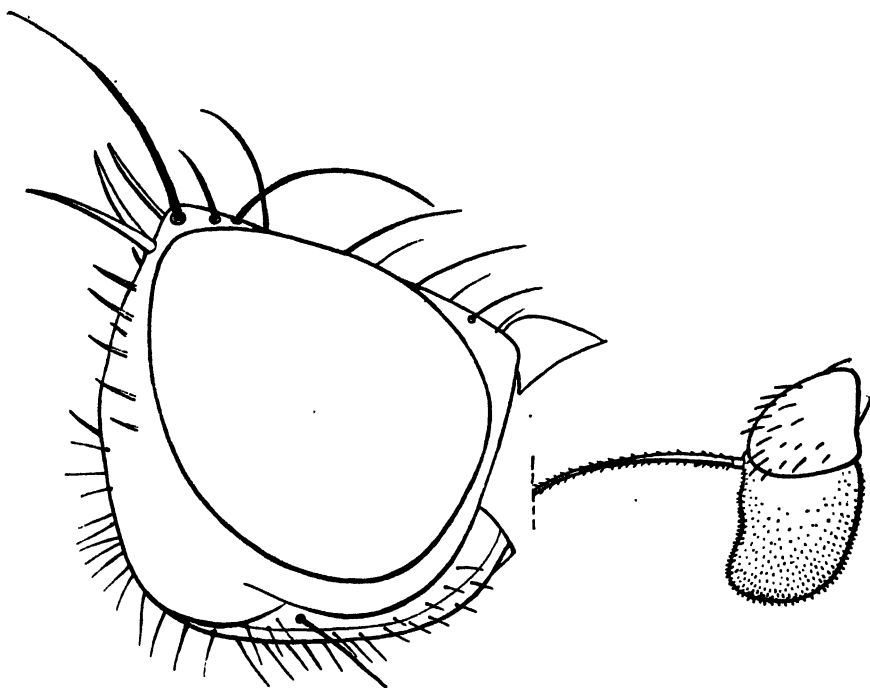


Fig. 88.

*Trypanea ambigua*, ♀,  $\times$  ca 60.

of antennae; vibrissal edge very faintly yellowish bristly; the lower mouth-edge furnished with many black bristles in the posterior half. Antennae light reddish yellow; second joint black bristly, with a very short median seta; 3rd joint more or less pointed at the upper apex; arista black, with the basal two-fifths yellowish. Palpi light dirty yellow, yellowish white bristly; proboscis very pale yellowish brown.

Mesonotum black, with the humeral and notopleural calli yellow, entirely covered with an ash-greyish tomentum and numerous yellowish pubescence; pleurae black, with the sutures yellow, covered with a tomentum and a pubescence as in the mesonotum, but the pubescence fewer; scutellum and postscutellum black, covered with an ash-grey tomentum, the former being very sparsely yellowish pubescent.

Abdomen blackish brown, with the lateral borders of the basal half more or less yellowish brown, moderately greyish tomentose and

yellowish pubescent; 6th tergite longer than the 5th; basal joint of ovipositor shining, blackish castaneous, furnished with numerous yellowish pubescence, as long as the two preceding tergites together.

Wings with proportionally large stigma which is a little longer than a half the second costal cell; r-m as long as the apical section of the anterior margin of IM<sub>2</sub>; pattern as in *cosmia* SCHINER, but all the hyaline spots smaller or narrower; R whitish hyaline in the basal half, but in the rest more or less greyish and with 3 small rounded whitish spots, of which the distal one is in the antero-apical corner, and the two remaining ones along m are very indistinct; IM<sub>2</sub> greyish, with 5 whitish hyaline spots in a row, of which the basal one is very large, occupying throughout the basal third, and the apical one is transverse oblong, along m-cu; Cu very pale greyish, with 6 rounded hyaline spots, of which the three are situated along the wing margin; axillary lobe nearly entirely whitish hyaline. Halteres and squamulae yellowish brown.

Legs yellow, mainly blackish pubescent and bristled.

Length: Body 3.8 mm; wings 4 mm.

Hab. Formosa—Ranrun (III).

Type in the Entomological Museum of Government Research Institute, Taihoku, Formosa, Japan.

### 155. *Trypanea formosae*, HENDEL.

LINDNER, Fl. Paläarkt., 49, Trypetidae, p. 201 (1927).

*Trypanea stellata*, HENDEL (nec FÜESSLY), Ann. Mus. Nat. Hung., XIII, p. 467 (1915).

The present species is very closely allied to *stellata*, FÜESSLY, but easily distinguished by the proportionally short pterostigma.

♂ ♀. Frons light yellow to light reddish yellow, entirely obscured by an ashy grey tomentum, often with a large yellowish median patch; lunula whitish, whitish tomentose; vertex more or less greyish, often with a large dark ocellar spot; vertical calli entirely ashy grey tomentose as in the vertex; face whitish, whitish tomentose, but the inner edge of the eye-margins almost always yellowish and non-tomentose;

back of the head usually blackish, gradually becoming yellowish below and toward the eye-margins, entirely dusted with an ashy grey tomentum, with the lower part yellowish pubescent; cheeks yellow, whitish tomentose, with a very few yellowish pubescence along the vibrissal edge. Antennae reddish yellow; 3rd joint very often blackish at the tip where it is distinctly pointed; arista black, with the basal fourth reddish yellow; 2nd joint often dark coloured, with a black median seta. Palpi yellow, black bristly; proboscis light reddish yellow.

Thorax entirely black, often with the middle of humeral and notopleural calli and with the sutures of pleurae reddish yellow, entirely covered by an ashy grey tomentum; scutellum with a small black dot at the bases of bristles; pubescence light yellow, rather sparse.

Abdomen black, entirely obscured by an ashy grey tomentum, and covered with a rather sparse light yellow pubescence, furnished with a few pale coloured bristles along the posterior margin of the last tergite; 6th tergite of female very little longer than the 5th; basal joint of ovipositor strongly shining, black, conspicuously yellowish-pubescent toward the base, longer than the two preceding tergites together; genitalia yellowish brown; hypopygium blackish.

Wings whitish hyaline, with pale veins which are darkened in the black portion; stigma a little shorter than a half the second costal cell, slightly yellowish, with a blackish brown dot at the end of sc. The star-shaped apical spot gives off 5 rays to the hind margin, the first one of those rays ending only to m, the second two reaching the mouth of  $IIM_2$ , the following one ending at the posterior tip of  $IM_2$  entirely along m-cu, and the last one only extending to the middle of  $IM_2$  nearly straight below r-m. The fore' border with a usual basal anterior triangular hyaline indentation in the middle of the mouth of  $R_1$  and a small rounded spot at the end of  $r_{2+3}$  in  $R_3$ , in the latter cell there is also a large apical hyaline spot which is not separated from the apical hyaline patch of  $R_1$  but leaving a very small black portion at the posterior end.  $R_1$  with a rounded hyaline spot just above m-cu, this spot in the male very often united with the hyaline apical portion of  $IM_2$ , and with a hyaline basal band which is united with the hyaline main

portion of  $IM_2$  in the male; on r-m with a distinct blackish band, but in the male rather faint;  $R_3$  with a very faint short brownish oblique band above r-m.

Legs yellow to reddish yellow, blackish pubescent and bristled.

All the bristles light yellowish brown, with the upper superior fronto-orbital and postvertical bristles and bristles of occipital row whitish.

Length: Body 2-3 mm; wings 2.2-3.5 mm.

Hab. Formosa—Arisan (X); Ranrun (III); Takao (IV); Tainan (XIII).

Types in the National Museum of Hungary, Budapest.

156. *Trypanea distincta*, sp. nov.

(Fig. 89; Pl. XIII, fig. 4.)

The present species is easily distinguished from all the preceding species by 4 inferior fronto-orbital bristles, and by 2 narrow, whitish hyaline, oblique apical bands of wings somewhat allied to *asteria* SCHINER, but differing in having 4 inferior fronto-orbital bristles and in having the convex m-cu.

♀. Frons light orange-yellow, with the eye-margins whitish, furnished with a very few yellowish pubescence in the middle and with many but sparse brownish one along the eye-margins; lunula whitish yellow; vertex very slightly darkened; face whitish yellow, with the eye-margins shining yellow; back of the head yellow, yellowish pubescent below; cheeks yellow, furnished with rather many short brown hairs in the portion beneath the genal groove. Antennae brownish, with the 3rd joint orange-yellow; 2nd joint in the interior side distinctly yellowish, with the very short median seta; 3rd joint with the upper margin straight, its tip being narrowly rounded; arista black, with the basal third reddish yellow. Palpi orange-yellow, with a very few short black bristles toward the tip; proboscis orange-yellow, more or less brownish.

Mesonotum blackish, with the humeral and notopleural calli yellowish, entirely obscured by a yellowish ashy grey tomentum, light

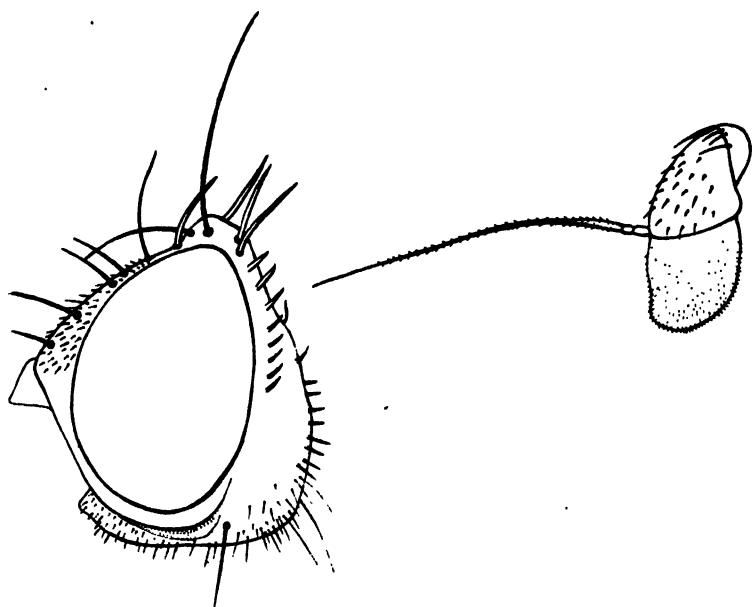


Fig. 89.

*Trypanea distincta*, ♀,  $\times$  ca 40. Antenna,  $\times$  ca 48.

yellow pubescent; pleurae dark brown, with the prothorax and the sutures yellowish, densely covered with an ashy grey tomentum; scutellum dark brown, entirely obscured by a yellowish tomentum, furnished with a few light yellow pubescence along the posterior margin; postscutellum blackish, covered with a yellowish grey tomentum.

Abdomen dark brown, more or less reddish brown toward the posterior margin of each the tergites, especially in the second joint, yellowish grey tomentose and yellow pubescent; 6th tergite longer than the 5th, along the posterior margin with 3 pairs of long pale brown bristles; basal joint of ovipositor shining black, as long as the two preceding tergites together, furnished with a sparse light yellow pubescence in the basal half.

Wings proportionally broad; stigma as long as half the second costal cell, with a distinct blackish oblique band which extends from the anterior basal corner far posterior to the anterior end of r-m;  $R_1$  with two well-defined very nearly placed hyaline indentations, the both



being extended into  $R_3$  but the first one longer;  $R_3$  with two hyaline apical spots, of which the anterior one is at the end of  $r_{2+3}$ , and the posterior one is extending obliquely posteriorly to the tip of  $IIM_2$  through the  $R_1$  left a narrow black apical band;  $R_1$  with two small rounded hyaline basal spots, and with a similar rounded spot very near the apical hyaline band, the latter extends to the posterior margin of wing and is parallel with the apical hyaline band;  $R$  blackish at the apical border, but with a very small hyaline spot;  $IIM_2$  with two narrow band-like indentations in the basal half, of which the 2nd one is short and is reaching the middle, while the first one extends to very near  $m$ ;  $IM_2$  blackish in the apical half, at where there are three hyaline band-like spots, of which the apical one is very narrow and is interrupted in the middle, the next one is somewhat triangular, and the rest is united with the basal hyaline portion in its posterior half;  $Cu$  in the apical half blackish and with two hyaline spots, of which the apical one is connected with the apical hyaline band of  $IM_2$ , and the remaining one is very large and is united with the intermediate one of  $IM_2$ , the basal hyaline portion being extended to the mouth along  $an$ . Halteres yellowish; squamulae whitish.

Legs dirty yellow, mainly black pubescent and bristled.

Length: Body 5.2 mm; wings 5.1 mm.

Hab. Formosa (Rikiriki III).

Only a single female, collected by Mr. N. TAKEDA, preserved in the Entomological Museum of Government Research Institute, Taihoku, Formosa.

## LXXI. Genus **ENSINA**, ROBINEAU-DESVOIDY.

Essai sur les Myodaires, p. 751 (1830).

This is distinguished by the very characteristic shape of the head and by the narrow elongate wings which possess a reticulate pattern.

Genotype—*Musca sonchi*, LINNAEUS.

Head narrower than thorax, about as high as wide, or a little shorter than wide, distinctly longer than high; frons flat, distinctly

elevated at the eye-margins, conspicuously broader than eye and longer than wide, gradually narrowed forwards; lunula well-developed, semi-circular; vertex distinctly carinate, with the very short narrow rather flat vertical calli which are about  $\frac{1}{3}$  as long as frons; face narrow and short, about as long as wide, very slightly broadened beneath, about half as long as frons, about  $120^\circ$  with the latter at the antennal base, rather slightly concave but the upper mouth-edge rather conspicuously produced forwards, rather distinctly longitudinally carinate in the middle; the antennal grooves distinct and reaching to the mouth-edge; the eye-margins of face rather narrow and same in width throughout the whole length; back of the head rather strongly produced behind, but the upper area somewhat flattened; cheeks linear with the mouth-edge, in profile very long and straight, and with the genal groove indistinct; the vibrissal-edge more or less bristly. Eyes oval, with the upper angle narrowed and more or less pointed. Antennae very short, inserted at the middle of eyes and near from each other, not reaching to the upper mouth-edge; 2nd joint with a distinct median seta; 3rd joint very little longer than or about  $1\frac{1}{2}$  times as long as wide, with its upper margin straight, its tip narrowly rounded or more or less pointed; arista very shortly pubescent. Palpi very long and narrow, very slightly curved upwards, almost always produced before the mouth-edge, bristly; proboscis very narrow and elongate, distinctly geniculate, with the long narrow pointed labella.

Mesonotum a little longer than wide, subquadrate, densely tomentose and moderately pubescent, moderately convex above; scutellum tomentose as in mesonotum, triangular or subtriangular, flat above, slightly pubescent or bare.

Abdomen as long as or very little longer than thorax, tomentose and pubescent, bristly at the tip; 5th tergite of male about  $1\frac{1}{2}$  times as long as the 4th; 6th tergite of female about as long as the 5th; genitalia and hypopygium rather small; the basal joint of ovipositor depressed, pubescent, distinctly shorter than the three preceding tergites together, but longer than the 5th and 6th together.

Wings proportionally long, with one or two very indistinct marginal

spines and with straight veins; stigma pointed, shorter than  $\frac{2}{3}$  the second costal cell; anal cell much shorter than or about as long as the 2nd basal cell; drawn out into a very short pointed lower angle;  $r_{4+5}$  bare, parallel with  $m$ ;  $r_{3+4}$  often with a very short veinlet in  $R_1$  straight above  $m-cu$ ;  $r-m$  distinctly after the middle of  $IM_2$ , perpendicular;  $m-cu$  parallel or convergent with  $r-m$ .

Legs rather stout; front femora with a row of distinct bristles on the under and upper sides; middle tibiae with a single spur; hind tibiae with a row of short bristles on the outer side.

Chaetotaxy complete: Ocellar bristles well-developed, divergent; fronto-orbital 1:3 or 2:2, in the latter case the upper superior pair whitish; inner vertical distinctly longer than the outer pair, the latter in *sororcula* WIED. whitish; postvertical whitish, well-developed, parallel, shorter than or as long as the outer vertical bristle; genal well-developed but not striking, behind the bristle there is a row of long bristles; bristles of occipital row well-developed, rather numerous and whitish; dorsocentral far behind the suture, but a little before the line connecting the anterior supra-alar bristles; meso-, sterno- and ptero-pleural 1, rather strong, on the posterior margin of mesopleuron there is a row of whitish bristles; scutellar 4 or 2.

Two species, found in our fauna, may be distinguished as follows:

1. Scutellar bristles 4; fronto-orbital 1:3; wings hyaline with brownish band-like spots.....*lacteipennis*, HENDEL.
11. Scutellar bristles 2; fronto-orbital 2:2; wings brownish, with numerous hyaline spots.....*sororcula*, WIEDEMANN.

### 157. *Ensina sororcula*, WIEDEMANN.

Auss. Zweifl., II., p. 509 (*Trypeta*) (1830).

*Ensina chilensis*, MACQUART, Dipt. exot., II., 3, p. 230, pl. 31, fig. 11 (1843).

*Ensina vacillans*, WOLLASTON, Ann. Mag. N. Hist., (3) I., p. 115 (1858).

*Ensina humilis*, LOEW, Monogr. Dipt. N. Amer., I., p. 81, (1862).

*Leptomysa variipennis*, V. D. WULF, Termesz. Füzet., XX., p. 143, pl. III, fig. 3-4 (1897).

*Ensina bisetosa*, ENDERLEIN, Zool. Jahr., Abt. Syst., XXXI., 3, p. 455, fig. 1 (1911).

*Ensina bisetosa* var. *nigrinotum*, ENDERLEIN, Zool. Jahr., Abt. Syst., XXXI, 3, p. 456 (1911).

This species is recently placed in *Paroxyna* HENDEL by HENDEL (1927), but it is a valid *Ensina* as it has the very good character of head.

♂ ♀. Frons orange yellow to light reddish brown, very often darkened toward the vertex, with the eye-margins whitish tomentose and very sparsely yellowish pubescent; lunula pale yellowish white; vertex greyish, with an ill-defined blackish ocellar spot; the vertical calli and the transverse edge of vertex more or less whitish; face yellowish white; back of the head blackish brown, with the broad eye-margins and the lower border yellow, very sparsely yellowish pubescent; cheeks yellow; vibrissal edge furnished with a few fine yellowish brown bristles. Antennae yellow to orange-yellow, broad; 2nd joint sparsely black bristled; 3rd joint about as long as  $1\frac{1}{2}$  times the width, distinctly but microscopically snow-white pubescent; arista almost always entirely black; palpi yellow, becoming reddish yellow toward the apex, furnished with very few black bristles; proboscis pale reddish yellow to yellowish brown, with the labella shorter than the stem.

Thorax entirely black, but distinctly obscured by a dense yellowish or brownish-grey tomentum; mesonotum yellowish pubescent, with three narrow very indistinct brown longitudinal streaks which are not reaching posteriorly to the hind margin; mesopleuron sparsely yellowish pubescent; scutellum furnished with a very few yellowish pubescence along its posterior margin; postscutellum less tomentose.

Abdomen blackish brown, densely covered with a yellowish or brownish-grey tomentum and sparsely with a rather long yellowish pubescence, with one pair of rather ill-defined large brown patches in each the tergites excepting of the basal tergite; 3rd to 5th tergites of female with two pairs of long black bristles along the posterior margin, but in the male there are no black ones excepting of the 5th tergite; 6th tergite of female very slightly longer than the preceding one, with a rather deep concave transverse sulcus, the portion posterior this sulcus being yellow and bare from pubescence and the rest (anterior half)

being as in the preceding tergites and furnished with 3 pairs of long black bristles along the crescent margin; basal joint of ovipositor shining dark castaneous to black, very sparsely black pubescent; genitalia brown.

Wings with a very short costal spine, the basal one-third being hyaline, and the rest brownish but with many large hyaline spots. Stigma blackish, with the basal half hyaline; 2nd costal cell hyaline with a brown median spot along the costa, at straightly below this spot there are two very faint brownish spots, of which the first one is at the base of  $r_{3+4}$  and the remaining one is at the apical margin of the anal cell. Brownish portion with hyaline spots as in follows:  $R_1$  with a large one just after the stigma, and two rather nearly placed smaller spots after the middle;  $R_2$  with almost always 6 spots, the four basal ones being very faint and small, and the two remainings being large and rather conspicuous, of which the apical spot is more distinct and extends from the anterior corner into  $R_3$  leaving the extreme tip, and the rest one is at just below the two distal spots of  $R_1$ ;  $R_3$  with 5 spots, of which the basal one is very large and is occupying nearly one-third the cell, the next two are in the middle and are band-like, the subapical one is connecting with the apical spot of  $R_2$  and interrupted in the middle, and the apical spot is distinctly rounded and placed in the middle of the mouth;  $R$  with two large but very faint spots;  $IM_2$  with four faint spots, of which the basal one is very large and is occupying nearly the basal one-third, the following two are band-like, but the third one is interrupted in the middle, and the remaining one at the anterior corner is very small;  $IIM_2$  with three equidistant rounded spots along the posterior margin and with a similar one at the anterior basal corner;  $Cu$  with three spots, of which the basal one is very large and is occupying in the basal half, and the two remainings are distinct. Halteres reddish brown; squamulae whitish grey.

Legs reddish yellow to reddish brown, with the basal two-thirds of femora blackish, but often the front or middle one pale coloured through the whole length of the under side, black pubescent and bristled.

All the bristles blackish, excepting for the upper superior fronto-

orbital, postvertical, outer vertical and genal bristles, and bristles of occipital row, whitish yellow.

Length: Body 2-3 mm; wings 2.9-3.1 mm.

Hab. Japan—Hachijo; Amamioshima (V); Okinawa (VII).

Formosa—Bioritsu (XII); Taihoku (I); Shinchiku (VII); Musha (V, VI); Kayahara (IX); Arisan (IV, X); Funkiko (II); Kanshirei (II); Ampin (IV); Takao (X); Hozan (II); Bozan (XI); Kammotsu; Rikiriki (III); Koshun (IV, V); Kuraru (V); Kammon; Tauran (IV); Taito (II, III); Gozenjo (IV); Karenko (VII, VIII).

Tropical and Subtropical regions.

Type was not found in the Natural History Museum of Wien, Austria.

158. *Ensina lacteipennis*, HENDEL.

Ann. Mus. Nat. Hung., XIII., p. 464 (1915).

The present species is easily distinguished from the preceding one by the chaetotaxy of both the head and scutellum, and by the wing-pattern.

♂ ♀. Frons orange-yellow to reddish brown, with the eye-margins whitish tomentose and microscopically very sparsely pubescent; lunula light yellow to light reddish yellow; vertex sometimes more or less greyish, with a dark or often black ocellar spot; face conspicuously shorter than long, light yellow to light reddish yellow, with the eye-margins sometimes more or less darker; back of the head light yellow to yellow, with a large trapezoidal black patch in the upper portion, sparsely light yellow pubescent; cheeks light yellow to yellow; vibrissal edge furnished with a very few fine pale brown hairy bristles. Antennae yellow to light reddish yellow; 2nd joint with a distinct black median seta; 3rd joint proportionally small, a little longer than wide; arista as in the preceding species, not very short as in HENDEL's descriptions. Palpi proportionally yellow, more or less reddish toward the apex, at where it is furnished with a few rather long brown bristles; proboscis yellow, with the labella as long as the stem.

Mesonotum blackish, with the humeral and notopleural calli and the lateral streak yellow, the latter being extended from the suture to the junction of the latero-basal corner of scutellum, entirely obscured by a yellowish grey tomentum and covered with a light yellow pubescence; scutellum yellowish brown to brown, with the margins paler, entirely obscured by a tomentum as in the mesonotum, but nearly bare from pubescence; pleurae yellow or blackish, in the former case with a broad lower marginal streak of mesopleuron and nearly whole surface of sternopleuron except the upper marginal streak blackish, and in the latter case with the sutures reddish yellow especially meso-sternopleural suture very conspicuously reddish yellow; the pubescence of mesopleuron being less conspicuous than in the preceding species; post-scutellum always black, entirely obscured by a greyish tomentum.

Abdomen blackish brown, with the hind margin of each the tergites narrowly yellowish, entirely but very slightly greyish tomentose and sparsely blackish pubescent, along the hind margin of the 3rd to last tergites there are two or three (in the last tergite) pairs of long blackish bristles; 6th tergite of female distinctly longer than the 5th; basal joint of ovipositor shining, castaneous, furnished with numerous very short pubescence all over the surface, as long as the three preceding tergites together; genitalia yellowish brown, prominent.

Wings with two very short costal spines, hyaline, with the stigma dark brown but its both ends being more or less yellowish white; brownish band-like spots as follows:  $R_1$  with three spots, the basal one faint and connecting the brown colour of the stigma, the intermediate one placed in the middle of the mouth and extended below to  $r_{4+5}$ , and the apical one at the extreme tip of the cell extending below to  $r_{4+5}$ ;  $R_1$  with two band-like spots in the middle, the first one at just after the intermediate band of  $R_1$ , and the second one just below the apical one of  $R_1$  and entirely united with the latter; on each r-m and m-cu there is a less distinct and narrower brown band; in both the second costal cell and  $IM_2$  there is a very faint brownish dot. These brown markings often very reduced leaving only three (without brown stigma) very small brown spots along the anterior margin. Halteres light reddish.

yellow to yellow; squamulae whitish to light yellow.

Legs yellow to light reddish yellow, mainly blackish pubescent and bristled.

All the bristles yellowish brown to blackish, with the postvertical, outer vertical, genal and occipital bristles whitish; fronto-orbital 1:3; scutellar 2 pairs.

Length: Body 3-3.5 mm; wings 3.5-3.8 mm.

Hab. Japan—Sapporo (IV, collected by Prof. S. MATSUMURA).

Formosa—Tabani (II).

Types in the Entomological Institute of Kaiser Wilhelm-Gesellschaft, Berlin-Dahlem, Germany.

## LXXII. Genus **XYPHOSIA**, ROBINEAU-DESVOIDY.

Essai sur les Myodaires, p. 762 (1830).

*Oxyphora*, LOEW, Eur. Bohrl., p. 81 (1862).

Genotype—*Musca miliaria*, SCHRANK.

Head as wide as thorax, a little broader than high, about half as long as wide, about  $\frac{2}{3}$  as long as high; frons conspicuously pubescent, flat, much broader than eye, distinctly narrowed forwards, with the eye-margins very slightly elevated; lunula distinct, semicircular; vertex distinctly carinate, with the short but rather broad vertical calli; face distinctly longer than wide, slightly broadened beneath, longer than frons, very slightly concave, with the median carina rounded; the mouth edge not distinctly produced; the antennal grooves very conspicuous and reaching to the mouth-edge; the eye-margins of face proportionally narrow and the same in width throughout the whole length; back of the head slightly convex; cheeks rather narrow, about  $\frac{1}{4}$  as high as head, with the rather broad short genal groove; the vibrissal-edge distinctly but shortly bristled in a rather long distance. Eyes oblong,  $2\frac{1}{3}$  times as long as wide, gradually narrowed upwards. Antennae inserted at the middle of eyes, distinctly apart from each other at their bases, about  $\frac{2}{3}$  as long as face; 2nd joint with a rather long median seta; 3rd joint about 2-2 $\frac{1}{2}$  times as long as wide, gradually narrowed apically, its



tip narrowly rounded; arista short pubescent. Palpi straight, rather long, broadened at the tip, conspicuously bristled; proboscis broad and short.

Mesonotum longer than wide, distinctly convex and covered with a dense pubescence and a tomentum; scutellum more or less flattened and pubescent.

Abdomen as long as thorax, not broader than the latter, densely covered with a tomentum and a pubescence, bristly at the tip; 5th tergite of male about as long as the two precedings together; 6th of female as long as or very slightly longer than the 5th; genitalia more or less prominent, but hypopygium very small; ovipositor more or less depressed, about as long as abdomen, with the basal joint densely covered with a rather long pubescence and about as long as the four preceding tergites together.

Wings rather large, with 1 or 2 rather short marginal spines and with rather straight veins; stigma about as long as  $\frac{2}{3}$  the second costal cell, pointed; anal cell a little shorter than the 2nd basal cell, drawn out into a short pointed lower angle;  $r_{4+5}$  distinctly bristled on the basal  $\frac{2}{3}$  the both sides, parallel with m; r-m after the middle of  $IM_2$ , slightly oblique, the posterior end being nearer to the wing-tip; m-cu nearly perpendicular, very slightly convex outwards.

Legs rather stout; front femora with a row of strong and long bristles on the underside; middle tibiae with a very long spur; hind tibiae with a row of rather strong bristles.

Chaetotaxy complete: Ocellar bristles divergent, strong, longer than any of the fronto-orbital bristles, the latter are 2:3-4; vertical very long, the inner pair being much longer than the outer pair; post-vertical rather long, divergent, much shorter than the outer vertical bristle; genal strong, above which there is a row of a few short bristles; bristles of occipital row fine and sharply pointed; dorso-central far behind the suture and on or a little before the line connecting the anterior supra-alar bristles; mesopleural 2 or 3; pteropleural 1; sternopleural 1 or 2; scutellar 4, the apical pair being a little shorter than the basal pair and convergent.

Only one species found in Japan.

159. *Xyphosia punctigera*, COQUILLETT.Proc. U. S. Nat. Mus., XXI., p. 338 (*Tephritis*) (1898).

♂ ♀. Yellow species of medium-sized, with yellowish hyaline-dotted wings. Frons light yellow to light orange-yellow, with a large triangular median patch just behind the lunula, light yellow pubescent; lunula light yellow, more or less whitish; vertex somewhat greyish, with the distinctly greyish ocellar triangle and vertical calli; face umber-yellow, with the antennal grooves whitish; back of the head yellow, more or less greyish above, rather densely yellow-pubescent below; cheeks light yellow, but the eye-margins orange-yellow; vibrissal edge with many but short black bristle-like hairs. Antennae yellow to reddish yellow; 2nd joint often more or less brownish, yellowish brown bristly, with a very long yellowish brown median seta; 3rd joint nearly as long as twice the width, with the upper margin straight, entirely microscopically pubescent; arista black, with the basal third yellow, very shortly pubescent. Palpi light yellow to yellow, brown bristled; proboscis almost always brownish yellow.

Mesonotum light umber-yellow, entirely obscured by a yellow tomentum, and covered with a numerous yellow pubescence, with the humeral and notopleural calli often more or less greyish white; scutellum as in the mesonotum, but distinctly less tomentose and pubescent; pleurae pale reddish yellow or pale brownish yellow, moderately whitish yellow tomentose and very sparsely whitish yellow pubescent; mesophragma usually black, but often with two yellowish streaks slightly yellowish tomentose; just behind the insertion of each wing there is a deep black dot.

Abdomen yellow, slightly yellow tomentose and densely golden yellow pubescent, the pubescence becoming very often black toward the posterior end, with two black median spots near the anterior margin of each the 4th and 5th tergites, rarely also in the 3rd, and with a very faint spot at the lateral margins of these tergites also; these black spots sometimes reduced; 6th tergite of female very slightly longer than the 5th, often nearly as long as the latter; basal joint of ovipositor reddish

yellow to brown, with its apex black, densely black pubescent; genitalia and hypopygium yellowish brown.

Wings light umber-yellow, with a large irregularly Y-shaped blackish band in the apical half, with many rounded hyaline dots all over the surface, and with a very short blackish costal spine. The stem of the Y-shaped band extending from m to the posterior wing-margin along m-cu; the proximal wing, from the stigma to the posterior end of r-m, connecting with the stem on m, about as wide as the stem; the distal wing very broad, occupying nearly all over the apical border. Hyaline dots as follows: Costal cell hyaline; second costal cell with two very large spots, with also a small band-like spot at the extreme apex; stigma with a yellowish spot at the base;  $R_1$  with three subquadrate spots along the mouth, the two distal ones being smaller than the rest placed at just after the stigma, and with the others in the basal border, one at the extreme base being glass-hyaline and the other yellowish;  $R_2$  with 4 yellowish spots, of which the three are situated at just below the three main spots of  $R_1$ , and an apical one at the antero-apical corner of the cell is smaller and rounded, very often there are one or two very small another dots;  $R_3$  with 6-9 small rounded dots which are rather irregularly arranged;  $R$  with two rounded spots which are rather widely apart from each other, at the extreme base there is sometimes an ill-defined yellowish spot;  $IM_2$  with two rows of usually 4 rounded dots, which are often irregularly connected with each other;  $IIM_2$  with 5 rounded dots, of which the three along the wing margin are equidistant, and the two remainings are at the interno-basal corner along m; Cu with two rows of irregularly sized dots, and with three equidistant rounded dots along the mouth; axillary lobe hyaline, more or less greyish, with 4 rounded glass-hyaline dots along the wing margin, and with 3 larger rounded ones along an. Halteres brownish, with the stem paler; squamulae whitish, with the margins yellowish.

Legs light dirty yellow, mainly brownish pubescent and bristled.

All the bristles yellowish; fronto-orbital usually 2:3.

Length: Body 6-8 mm; wings 5.5-7 mm.

Hab. Japan—Rishiri-shima (VII); Taisetsu-san (VII); Sapporo (VI);

Iwate (VIII); Yatsugadake (VIII); Gifu (V).

Type of the male in the U. S. Nat. Museum, Washington, D. C.; of female in the Entomological Museum of Government Research Institute, Taihoku, Formosa.

### LXXIII. Genus *ICTERICA*, LOEW.

Monogr. Dipt. N. Amer., III., p. 387 (1873).

*Oxyphora*, LOEW, Europ. Bohrl., p. 80 (1862).

*Westermannia*, LIOY, Atti Ist. Ven. 3a. ser. IX., 1022 (1864).

Genotype—*Trypeta Westermanni*, MEIGEN.

Head about half as long as wide, broader than high, higher than long; frons  $1\frac{1}{2}$ –2 times as wide as eye, slightly narrowed forwards, flat, moderately pubescent, with the eye-margins slightly elevated; frons in profile very slightly convex before the antennal base and about  $120^\circ$  with the face; vertex carinate, with the short vertical calli, which are about  $\frac{1}{4}$ – $\frac{1}{3}$  as long as frons and are rather widely apart from the eye; face slightly concave, with the rather narrow antennal grooves and eye-margins, the upper mouth-edge being more or less produced forwards; back of the head moderately convex, except the upper area more or less flattened; cheeks narrow, about as wide as or a little broader than the 3rd antennal joint, with the distinct but narrow genal groove; the vibrissal-edge, nearly bare from distinct bristles. Eyes rather long, about twice as long as wide, with the upper angle a little narrower than or as wide as the lower angle. Antennae inserted at the middle of eyes and near from each other, not reaching to the mouth-edge; 2nd joint with a distinct but short median seta 3rd joint  $1\frac{1}{2}$ –2 times as long as wide, with the upper margin straight or convex, its tip rounded or more or less pointed; arista distinctly pubescent. Palpi very or moderately broad, distinctly bristled; proboscis short, with the broad labella.

Mesonotum a little longer than wide, convex above, tomentose and pubescent; scutellum flattened above.

Abdomen as long as thorax, distinctly bristled at the tip, tomentose and pubescent, with or without spots; 5th tergite of male much longer

than or as long as the 4th; 6th of female shorter than the 5th; genitalia moderate; ovipositor depressed, short, pubescent.

Legs rather short, bristly as usual.

Wings with two long or short marginal spines, and with rather straight veins; stigma pointed, about  $\frac{2}{3}$  as long as the second costal cell; anal cell a little longer than or as long as the 2nd basal cell; r-m behind the middle of IM<sub>2</sub>, perpendicular or a little oblique; m-cu a little oblique or perpendicular, very slightly curved or straight; r<sub>4+5</sub> distinctly bristled on the both sides, parallel with m, the latter is more or less curved. Thoracal squamulae a little exceeding the abdominal one.

Chaetotaxy complete: Ocellar bristles strong, divergent; fronto-orbital 2:2 or 2:3; inner vertical very long, while the outer pair is very short and whitish; postvertical parallel or slightly divergent, whitish; genal weak; bristles of occipital row whitish, thick and obtuse; dorsocentral 1, behind the suture and very little before the line connecting the anterior supra-alar bristles; sterno-, ptero- and mesopleural 1, strong, the latter being rarely two; scutellar 4, very long, the apical pair being crossed and a little shorter than the basal pair.

Two species found in our collection, differing as in follows:

1. Dark coloured species, with the 3rd antennal joint rounded at the tip; ptero-stigma with two distinct rounded spots; R<sub>1</sub> with 4 spots; the apical spot of R<sub>5</sub> very small..... *maculata*, sp. nov.
11. Yellow species, with the 3rd antennal joint pointed; ptero-stigma with two spots; R<sub>1</sub> with 3 spots; the apical spot of R<sub>7</sub> wanting..... *japonica*, WIEDEMANN.

#### 160. *Icteric japonica*, WIEDEMANN.

Aussereurop. zweifl. Ins., II., p. 485 (*Oxyphora*) (1830).

Yellowish species. Head as wide as thorax, a little broader than high, about  $\frac{4}{5}$  as long as high, or about half as long as wide; frons much broader than eye, distinctly narrowed forwards, flat, pubescent, orange-yellow, about 120° with face at the antennal bases, with the straight greyish eye-margins which are very slightly elevated; lunula

distinctly elevated, semicircular, greyish white; vertex carinate, with the very short vertical calli which are about  $\frac{1}{4}$  as long as frons; face yellowish white, slightly concave, about as long as frons, with the upper mouth-edge very slightly produced forwards, with the eye-margins narrow and same in width throughout, and with the antennal grooves shallow and reaching to the mouth-edge; back of the head yellowish, rather long yellowish pubescent, but covered with bristle-like hairs below, moderately convex, with the upper area more or less flattened; cheeks narrow, about as broad as the 3rd antennal joint, with a narrow genal groove; the vibrissal edge bare; the mouth-edge in profile distinctly convex, shorter than the length of head (between the antennal base and the occipital foramen). Eyes about half as wide as long, with the posterior margin slightly convex and the anterior margin evenly convex, the upper and lower angles being about equally rounded. Antennae  $\frac{4}{5}$  about as long as face, yellowish, inserted at the middle of eyes, the intermediate space between the antennal bases being about half as wide as the 1st antennal joint; 1st joint very short, brownish yellow; 2nd joint paler than the 1st, with a distinct but short black median seta, on the upper and inner side furnished with short black bristle-like hairs; 3rd joint rather long, a little longer than the two basal joints together, about  $1\frac{1}{4}$  times as long as wide, with the upper margin straight, its tip being pointed; arista distinctly blackish pubescent, pale yellow, but blackish toward the tip, the broadened basal portion being very short. Palpi pale yellow, with the apical rounded margin brownish, slightly curved upwards, distinctly but sparsely bristly; proboscis yellowish brown, short, with the labella broad.

Mesonotum yellowish brown, obscured by a greyish yellow tomentum and a pale yellow short and thick pubescence, a little longer than wide; pleurae paler than the mesonotum, slightly covered with a whitish yellow tomentum, on the meso- and pteropleurae there are fine brownish hairs, on the sternopleuron with some yellowish short hairs; scutellum yellowish brown; postscutellum shining, black.

Abdomen orange yellow, yellow pubescent, brownish bristly at the

tip, as long as thorax; 6th tergite of female as long as the 5th, more or less shining; each the 3rd—5th tergites with two rounded blackish brown spots in the middle, the first pair being distinctly smaller than the following pairs; the basal joint of ovipositor depressed, brownish yellow fine-pubescent, about as long as the two preceding tergites together, about  $\frac{4}{5}$  as long as wide; the base of dorsum and venter more or less darkened.

Wings moderate in length, moderately narrowed apically, with two short black costal spines; stigma about  $\frac{2}{3}$  as long as the second costal cell, moderately pointed; anal cell as long as the 2nd basal cell, drawn out into a more or less long pointed lower angle;  $r_{2+3}$  and  $r_{4+5}$  straight, the latter is distinctly bristled on the both sides; r-m behind the middle of  $IM_2$ , widely apart from m-cu, very slightly oblique, its posterior end being nearer to the wing-tip, very slightly S-like curved; m-cu nearly perpendicular, very slightly convex outwards; m in the apical section parallel with  $r_{4+5}$ , but very slightly curved at the base. Wings brown, but hyaline toward the base, with 4 blackish patches, of which two near the base (one in the stigma and one at the apex of the anal cell) are distinct, and the apical two (one on  $r_{2+3}$  and one at the postero-apical corner of  $IM_2$ ) are very faint, and with numerous hyaline spots as follows: Stigma black, with two very small indentations, one being at the tip and the other at the base;  $R_1$  with three large rounded spots, which become gradually smaller toward the apical one;  $R_2$  with two rounded spots along the wing-margin, with 6 along  $r_{2+3}$ , and also with 4 very minute dots along  $r_{4+5}$ ;  $R_3$  with a large rounded spot near r-m and two small ones near the wing margin, between these spots there are more than 6 smaller dots, which are rather irregularly arranged;  $R$  with two distinct rounded spots which are widely apart from each other and are in the apical half of the cell;  $IIM_2$  with three equidistant rounded spots near the wing-margin and one near the antero-basal corner of the cell, between these spots there are three smaller dots;  $IM_2$  with 3 rounded spots nearly along m, and a little larger one in the middle of cu; Cu with 3 along the mouth, two larger ones in the middle of cu, and two others along an, 4 or 5 another very small dots scattered; axillary

lobe with 4 equidistant rounded spots along an and three similar ones along the wing-margin.

Legs yellowish brown; the lower bristles of the front femora rather numerous and yellow, the upper bristles being also rather numerous but very fine; a single spur of middle tibiae brownish yellow; hind femora with a row of very short brownish yellow bristles.

All the bristles yellowish; bristles on the head all destroyed.

Length: Body (without ovipositor) 4 mm; wings 4.5 mm.

Hab. Japan.

Described from only a single female Type of WIEDEMANN preserved in the Zoological Museum of Berlin, Germany.

This is very near to *schneideri* LOEW, and the latter may be a synonym of *japonica*.

161. *Icteric maculata*, sp. nov.

[Fig. 90; Pl. XIV, fig. 1.]

Rather near to *zelleri* LOEW, but easily distinguished by the fewer hyaline spots of wings and by the well-curved m-cu.

♀. Frons broader than eye but not exceeding  $1\frac{1}{2}$  the width of the latter, pale yellowish brown, with the eye-margins more or less greyish, with a very few black pubescence in the middle and with many similar one along the eye-margins; lunula whitish; vertex more or less brownish, with the black ocellar dot and with the more or less shining vertical calli; face broader than long, whitish yellow; back of the head yellow, becoming paler toward the cheeks, with a very large blackish patch in the upper portion, covered with a sparse black pubescence; cheeks pale yellow, with the vibrissal edge more or less black pubescent. Antennae reddish yellow, with the 2nd joint more or less brownish; 2nd joint black bristly, with the median seta black; 3rd joint yellowish pubescent, a little longer than wide, with the upper margin convex, its tip conspicuously rounded; arista distinctly longer than antenna, black, with the base reddish yellow, microscopically pubescent. Palpi yellow, very



slightly brownish toward the apex, provided with short and black bristles; proboscis reddish brown.

Mesonotum blackish, with the humeral and notopleural calli yellow, entirely obscured by a dense greyish yellow tomentum and covered with a yellow pubescence, with very small brown dot at the base of each the dorsocentral, praescutellar, praesutural and upper posterior supra-alar bristles, and also at the proximal end of the suture; scutellum blackish, with the lateral margins very narrowly yellowish, entirely covered with a rather dense greyish yellow tomentum and furnished with a few light yellow pubescence, at the base of each the scutellar bristles with a small blackish dot; pleurae reddish yellow, with the prothorax yellow, obscured by a greyish yellow tomentum, on the mesopleuron there is a

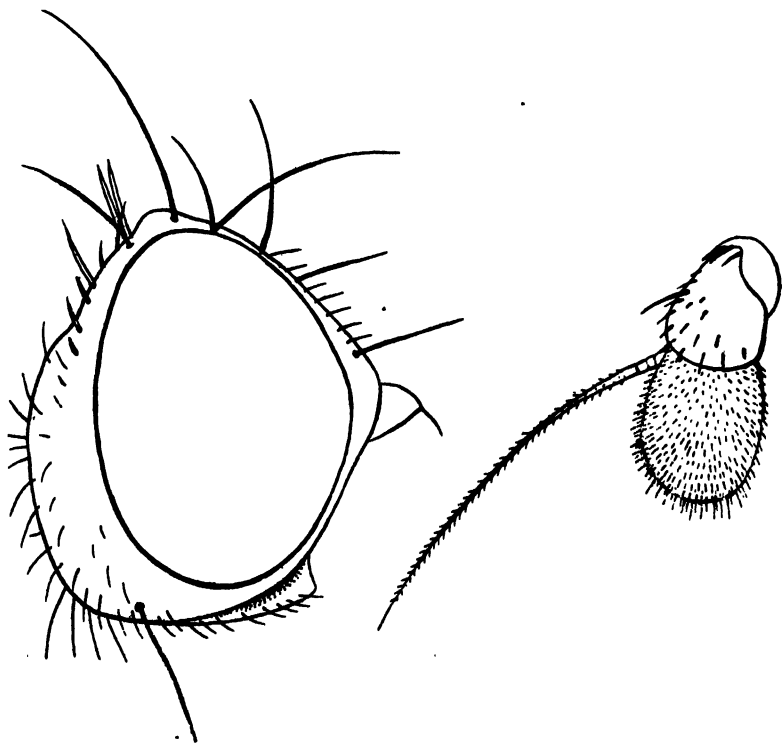


Fig. 90.

*Icteric maculata*, sp. nov. ♀,  $\times$  ca 50. Antenna,  $\times$  ca 60.

few black pubescence; postscutellum coloured and tomentose as in the scutellum.

Abdomen blackish castaneous, with the two basal tergites yellowish brown, obscured by a greyish tomentum and covered with many light yellow pubescence, with a narrow and short median band along the posterior margin of each the 2nd to 5th tergites, and with one pair of very large non-tomentose quadrate lateral patches on the 3rd to 6th tergites, these patches being left the anterior border and the median streak in each tergite, the latter becoming very narrow toward the tergite; 6th tergite as long as the 5th, nearly entirely shining blackish castaneous; basal joint of ovipositor a little shorter than the two preceding tergites together, shining reddish yellow, with the base and tip broadly black, evenly black pubescent all over the surface.

Wings rather narrow, with a very short black costal spine, blackish brown, with the base hyaline, and with three large paler portions of which the anterior one is in the middle along the anterior wing-margin, in where there are three long hyaline indentations just after the stigma, the posterior two indentations are very large and more conspicuous, one occupying nearly all over IIM<sub>2</sub> and the remaining one Cu and axillary lobe. Hyaline spots as follows: Second costal cell with two large quadrate spots; stigma with two widely apart very small more or less rounded ones along the costa; R<sub>1</sub> with a very small one near the tip, besides the three indentations; R<sub>2</sub> with 3 at the apex, 3 in the middle just below the costal indentations, and 2 at the base; R<sub>3</sub> with a very small rounded dot in the middle along the mouth, a similar one near the antero-apical corner, and two widely apart larger rounded spots along m, the basal one being above the anterior end of m-cu; R with two conspicuous and three indistinct small dots; IIM<sub>2</sub> with 5 rounded spots, three along the wing margin and two remainings along m; Cu and axillary lobe with many spots. Halteres light reddish yellow; squamulae greyish, with the margins reddish yellow.

Legs yellow, blackish pubescent and bristled.

All the bristles blackish, but the postvertical and occipital bristles whitish; fronto-orbital 2:3.

Length: Body 4.5; wings 5 mm.

Hab. Formosa (Arisan X).

Described from a single female; preserved in the Entomological Museum of Government Research Institute, Taihoku, Formosa.

#### LXXIV. Genus *NOEËTA*, ROBINEAU-DESVOIDY.

Myodaires, p. 778 (1830).

*Hoplochaeta*, RONDANI, Dipt. Ital. Prodr., I., p. 113 (1856).

*Carphotricha*, LOEW (p. p.), Europ. Bohrl., p. 77 (1862).

*Paranoëta* (Subg.), n.

Head as wide as or a little broader than thorax, broader than high, much higher than long, less longer than half the width; frons 3 times as wide as eye, much broader than long, slightly narrowed forwards, flat or concave, very sparsely but long haired, with the eye-margins very slightly or distinctly elevated; frons in profile straight and longer than face, a little more than 100° at the antennal base with the latter; lunula distinct but not broad; vertex rather roundly carinate, with the very large vertical calli, which are extending over the middle of frons, and are widely apart from the eye; face moderately concave, the upper mouth-edge being more or less produced forwards, very often with a black spot below the antennae, with the antennal grooves rather distinct and reaching to the mouth-edge, and with the eye-margins moderate in width and very often with a black spot at the side of antennae; cheeks broad, about  $\frac{1}{3}$  as high as eye, with the rather distinct genal groove, the mouth-edge being slightly convex and conspicuously shorter than height of head; the vibrissal-edge more or less bristly; back of the head very slightly and rather evenly convex. Eyes proportionally small, oval, about twice as long as wide, with the posterior margin much less convex than the anterior margin, and the upper angle distinctly narrower than the lower one. Antennae inserted just below the middle of eyes; rather apart from each other at the bases, about as long as face; 2nd joint very small, with:

a long median seta; 3rd joint  $1\frac{1}{2}$ – $2\frac{1}{2}$  times as long as wide, with the upper margin concave and the lower margin strongly convex, its tip sharply pointed. Palpi rather large, very broadened apically but the tip more or less angulate, distinctly bristled; proboscis very short, with the very short and broad labella.

Mesonotum a little longer than wide, strongly convex above, densely tomentose and covered with a dense erect pubescence; scutellum rather small and rounded, strongly or moderately swollen above, polished or tomentose; squamulae rather large.

Abdomen a little shorter than thorax, densely tomentose and pubescent, distinctly bristled; 5th tergite of male about as long as the 4th and 3rd together; 6th of female longer than or as long as the 5th, polished or tomentose; genitalia rather prominent; ovipositor rather small and depressed, its basal joint as long as or longer than the 6th tergite and not bristly but finely pubescent.

Wings near the base broadened and then gradually narrowed toward the tip, with two or four costal spines, brown or blackish brown, hyaline spotted and radiate toward the anterior and apical margins; stigma longer than a half the second costal cell, more or less pointed; anal cell shorter than or as long as the 2nd basal cell, with the lower angle pointed;  $IM_2$  with the pointed lower apical angle;  $r_{2+3}$  straight or wavy;  $r_{4+5}$  straight, distinctly bristled on the basal half of the upper side, but on the under side there is a few bristles at the base, nearly parallel with m, the latter undulate; r-m after the middle of  $IM_2$ , nearly perpendicular; m-cu straight, parallel with r-m.

Legs moderate in length; front femora rather strongly bristled; middle tibiae with a single not very long spur; two pairs of posterior femora with a row of short bristles on the under side; hind tibiae with a row of rather long bristles on the outside.

Chaetotaxy complete: Ocellar bristles long, divergent, whitish or black; fronto-orbital 3–4:4– more, the lower pair of superior fronto-orbital being long and black and the remainings whitish, and one upper and two lower inferior fronto-orbital pairs being black; inner

vertical black and very long, but the outer pair shorter; postvertical strong, very widely apart from each other, between the postvertical bristles there are two pairs of whitish short bristles of which the middle pair is crossing at their tips; genal not striking, whitish or black; bristles of occipital row whitish, very strong; dorsocentral 1, distinctly behind the suture but a little before the line connecting the anterior supra-aral bristles; sterno-, meso- and ptero-pleural 1, black, on the posterior margin of mesopleuron there is a row of whitish bristles; scutellar 4, black, on the margin (in the Genotype) there are some whitish shorter bristles.

#### Key to the Subgenera of *Noeëta*

1. Frons flat, with the narrow vertical calli and the less elevated eye-margins; scutellum strongly swollen and polished; 6th tergite of female polished; basal joint of ovipositor as long as the 6th; wings narrowed apically, with two costal spines and with the straight  $r_{2+3}$ ; fronto-orbital bristles 3-4: 4; scutellar bristles 4, besides the whitish ones. .... *Noeëta*, s. str.
11. Frons in the middle distinctly concave, with the broad well-elevated vertical calli and eye-margins; scutellum tomentose and rather flat; 6th tergite tomentose and a little shorter than the 5th; basal joint of ovipositor about as long as the two preceding tergites together; wings not distinctly narrowed apically, with 4 costal spines and with the undulate  $r_{2+3}$ ; fronto-orbital bristles 3: more than 4; scutellar bristles 4, without any other. .... *Paranoëta*, nov.

#### 162. *Paranoëta japonica*, sp. nov.

(Fig. 91; Pl. XIV, fig. 3)

A blackish species, of medium-sized. Frons pale orange-yellow, with the eye-margins more or less whitish, in the middle just behind the lunula and also along the eye-margins there are a very few whitish hairs; lunula whitish; vertex more or less greyish, with a black or dark ocellar dot; vertical calli broad and oblong, well-defined, more or less greyish; face whitish yellow, without any black spot; back of the head whitish yellow, more or less darkened above excepting of the eye-margins, furnished with many strong whitish bristle-like hairs below; cheeks whitish yellow; vibrissal edge furnished with a small





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